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New—DeLee's Obstetrics

Both text and illustrations received careful revision in the preparation of this **Fifth Edition.** The greatest increase was made in those sections devoted to the work of the general practitioner. Dr. DeLee added many new illustrations, and rewrote completely the chapters on the Treatment of Hyperemesis, Eclampsia, Abruptio Placentae, Placenta Praevia, Ruptura Uteri, Postpartum Hemorrhage, Breech Presentation, and the Operation of Forceps. The chapter on Contracted Pelvis reflects the latest simplified methods of treatment. The chapter on Forceps is much enlarged and contains new illustrations. The illustrations for the new low or cervical cesarean section—laparotrachelotomy—have been improved and increased in number to make the operation more easily learned. The operation of Gottschalk-Portes, temporary explantation of the infected uterus, has been briefly described. The chapters on Embryology and on Puerperal Infection have been revised. In this edition, too, he has drawn attention to the factors which make for a high maternal mortality, laying emphasis upon the causes and their prevention.

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HEADACHE*

BY DANA DRURY, M.D., F.A.C.S.†

PART I

HEADACHE may be a comparatively independent affection, and remain so throughout the greater part of life. Although in such cases it may sensibly prejudice the enjoyment of existence and interfere in no small degree with the capacity for work, it is nevertheless in this form no dangerous evil, nor threatening to life. But here also, as we shall see, precise diagnosis and differentiation of individual varieties is by no means always easy, although these are essential preliminaries to the efficient course of treatment.

On the other hand, headache is one of the commonest symptoms of the most diverse complaints, acute and chronic, mild and severe. There is hardly an organ in the body damage to which is not accompanied by symptomatic headache. In such cases also it not infrequently dominates the scene, and often enough, if only temporarily, stands in the foreground of the whole clinical picture. At times it is one of the first signs of a severe disease, and on that account of no little prognostic significance. For all these reasons every patient presenting himself to the physician with the complaint of headache should be submitted to a minute and complete examination.

Not only the nervous system, but the organs of the thoracic and abdominal cavities, the pulse, blood, urine, and much besides must be carefully investigated. It is not, however, on that account necessary to assume beforehand the existence of a serious complaint. It should always be borne in mind that so far as life is concerned the great majority of sufferers from headache may be given a good prognosis. In the present state of our knowledge any systematic classification of the different forms of headache offers considerable difficulty. Formerly a distinction was made according to the severity of the complaint: cephalgia, under which name were included the milder forms, and cephalea, which designated the more severe ones. Other distinctions were the accidental from the habitual, the transitory from the chronic, the periodical from the continual, the essential from the systematic.

An attempt was made to divide true headaches from allied affections, such as neuralgias, as well as from head pains in diseases of the throat and nose and of the accessory sinuses, in dental caries and aural disease, and from hysterical headache and the oppression of the head of neurasthenics. True headaches were classified into those without obvious anatomical lesion and those caused by organic disease. Among the former were included: migraine, the headaches of children, of adolescents, the headaches of anaemia and vaso-paralytic headaches. Among those caused by organic disease would be included hyperaesthesia of the hairy scalp, nodular headache, those due to disease of the bones of the skull or of the periosteum, also those caused by disease of the brain and its coverings.

It is possible that these attempts at classification are too one-sided, too superficial, possibly, also, partly too comprehensive, as were those of earlier times; thus, the classification mentioned above, however desirable, goes ahead of the facts at our disposal, takes insufficient account of our practical requirements, and fails to attain its aim. It is by no means decided whether there may not be anatomical changes underlying migraine. The headaches caused by dental caries, diseases of the nose and throat and ears, have also underlying organic changes, which lead to irritation of the dural nerves. Hyperaesthesia of the scalp occurs in all sorts of functional and organic headaches. There are also good grounds for doubting whether it is feasible to distinguish the headache of children and adolescents as a special subdivision of the group characterized by absence of an anatomic lesion. It is obvious that, in the present state of our knowledge upon this subject, it is not even remotely possible to undertake a classification upon an aetiologic or anatomic basis. That this must be the goal of our endeavor is beyond dispute.

Even although the fact must be emphasized that headache, pathologically speaking, has no individual entity as a disease, it would be contrary to facts to deny that this symptom very frequently persists a long time as the sole or most prominent one, and must be regarded as an entity from the point of view of differential diagnosis. It is not long since every headache was considered to be of nasal origin and was treated as such. We have learned with time to free ourselves of such exaggerations and to place

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†For record and address of author see "This Week's Issue," page 204.

differential diagnosis upon a more precise basis. It stands today established that headache in nasal disease of every sort is an extremely distressing symptom and may, on account of its severity and obstinacy, mask all others.

That diseases of the nose are capable of producing headache should cause no surprise since the sensory supply to the region in question is entirely from the first and second branches of the fifth nerve. The anterior and posterior ethmoidal nerves springing from the frontal branch of the first division (ophthalmic) innervate the mucous membrane of the anterior part of the nasal cavity, the septum, the anterior ethmoidal cells and the frontal sinus as well as the skin of the nose as far as the tip, and that of the forehead from the middle-line as far as the centre of the orbital margin. The second division (maxillary) gives off the superior dental nerves supplying the floor of the nose and the maxillary antrum; in addition sensory twigs go from the spheno-palatine ganglion to the mucous membrane of the posterior portions of the nasal cavity and septum as well as to that of the posterior ethmoidal cells and sphenoidal sinus. These three sensory zones are therefore of importance because a consideration of them affords a clue to the location of nasal diseases.

Speaking generally, localized pain at the upper inner corner of the orbit or over the eyebrow denotes disease of the anterior part of the nasal cavity, of the frontal sinus, or of the anterior ethmoidal cells; pain situated deeply in the head is attributable to disease of the posterior part of the nasal cavity or of the sphenoidal sinus, and pain in the cheek or in the teeth (dental trouble being excluded) extending to the nose or cheek points to disease of the antrum or floor of the nose.

Although these local and neuralgic pains of nasal origin are, strictly speaking, not to be reckoned as actual headaches, they must nevertheless be discussed for diagnostic reasons, quite apart from the fact that in individual cases pains in the interior of the skull occur as well, as for instance, in empyema of the frontal sinus. Localized pains occur almost exclusively in acute inflammations of the accessory sinuses. In acute empyema of the frontal sinus and maxillary antrum there is often in addition a localized tenderness to pressure of so acute a nature and anatomically so exactly corresponding to the position of these cavities that without more detailed examination (transillumination, etc.), the diagnosis can easily be made.

In the acute inflammations of the ethmoidal cells and sphenoidal sinus a careful examination is naturally essential. The spontaneous pain may also radiate into surrounding parts, as from the antrum to the teeth and temporal region, from the frontal sinus to the eye and forehead as far as the margin of the hair; it must also be borne in mind that sphenoidal sinus pain is often referred forwards to the forehead. The extraordinary acuteness of the pain characteristic of these cases is, in addition to the pressure upon the trigeminal nerve-endings through inflammatory swelling of the mucous membrane, to be explained by the simultaneous pressure effect due to retention of exudate in the cavities owing to closure of their orifices.

Neuralgiform pains in the course of the supra- and infra-orbital nerves and of the superior dental nerves occur with the acute and chronic inflammations of the accessory cavities, partly owing to direct extension of the inflammation (perineuritis) to the nerves in relation with the particular bony walls, supra-orbital with that of the frontal sinus, infra-orbital and superior dental branches with that of the antrum), partly through irradiation to another branch. This latter mode undoubtedly accounts for the neuralgia in the region of the supra-orbital nerve which sometimes accompanies inflammation in the antrum, since it is well established that even intermittent frontal headache may be present with disease of this cavity without any involvement of other accessory cavities (frontal or sphenoidal).

Actual headache referred to the interior of the skull is more or less widely diffused over the whole head. Initially and in the milder cases it is a pressure, resembling the neurasthenic, which may increase after a time and become a dull pain, primarily in the forehead, but also affecting the vertex and occiput. A universally familiar example of this is to be found in the mental obfuscation of an acute cold with the associated characteristic aprosexia of the nose (incapacity to fix the thoughts or concentrate the attention), which may serve as a prototype of all those headaches which arise as a result of inflammatory swelling of the mucous membrane and nasal obstruction. Their pathogenesis is to be sought in the passive hyperaemia accompanying these nasal affections, which, on anatomic grounds, spreads to the interior of the cranium.

The veins of the nasal cavity communicate extensively with those of the brain, dura and longitudinal sinus and the nasal lymphatics by means of the lamina cribosa with the great subarachnoid and subdural lymphatic space. Thus a stasis both of blood and lymph circulation may ensue. This congestion is further increased through the fact that at each breath, as the result of a rarefaction of air on the obstructed side, fluid is aspirated into the upper air passages. The diminished or suspended nasal respiration has a further prejudicial effect in that the absorption of oxygen in the circulation is lessened as well as the elimination of carbon dioxide and other toxic products of combustion. Thus a diminution of haemoglobin (anaemia, or more correctly, chlorosis) is brought about in the brain and its coverings as well as in the rest of the organism. That these sequelae of nasal obstruction cannot be got rid of by means of

drugs is obvious. They occur through relaxation of the alae nasi, particularly seen in old age, in chronic rhinitis, often leading to hypertrophy of the posterior ends of the inferior turbinates, in chronic inflammation of the accessory sinuses, in hyperplasia of tonsils, adenoids and ozena, also with polypi and all forms of tumors of the nose.

According to my observations, there is in the last class of cases early hyperaesthesia of the cheeks and the skin of the nose, particularly when the tumors originate in the spheno-palatine fossa. There can, too, no longer be any doubt that deviations and thickenings of the septum, often of traumatic origin, bony ridges and spurs of the same, either alone or in association with the above mentioned affections, if they lead to narrowing of the nasal passages or contact between the septum and the turbinates, may give rise to such forms of headache. These headaches, however, are not persistent, lasting only for a short period and while the pressure remains.

In rarer cases the latter may arise not only by means of the above mentioned circulatory disturbances, but also reflexly, for the most part only in association with general hyperaesthesia, as is characteristically seen in the clinical picture of neuraesthenia. The stimulus in such cases may come from any part of the nose; there is then usually considerable hyperaesthesia on examination with a probe, the richly innervated tuberculum septi, from which, as is well known, asthma attacks may be precipitated, being especially susceptible.

Since there is an intimate relationship between the nasal mucous membrane and the genital organs, and a reflex nervous hyperaemic swelling of the mucous membrane may often be observed during menstruation (or with strong sexual excitement), the assumption is not untenable that the exacerbation of headaches of variable origin so frequently occurring at the menstrual epoch and the periodic recurrence of migraine attacks precedent to or coincident with it may in part at least be the result of this nasal obstruction. It must also be admitted that the migraine tendency—quite apart from any connection with the sexual organs—may be brought to a head by any pathological process leading to nasal obstruction.

In the diagnosis of nasal headache, besides the above points the following must be taken into consideration: Its recognition is most easily noted through the characteristic localized pain, associated with clearly defined tenderness on pressure. The neuralgic pain offers greater difficulties. The following are the commonest causes of typical tic: malaria, rheumatism (arthritis), ocular troubles, pulp stones, influenza and intoxications. Influenza is of particular importance since both inflammations of the accessory sinuses and genuine neuritic neuralgias are common events, so that only detailed examination can decide between them. The statement made from the rhinological side that every neuralgia in the neighborhood of the fifth nerve occurring after influenza is the result of an acute sinus is open to question, as is evident from the frequent cures of these neuralgias by means of simply anti-neuralgic treatment, leaving the nose entirely out of consideration.

The distinction from migraine is always easy if the hereditary nature of the latter and its commencement in early life be kept in mind, together with the realization of the fact that vomiting and similar phenomena representing aurae are not accompaniments of nasal headaches. Since, as we have already seen, inflammatory ocular affections may be associated with headache, and, moreover, as we now know, diseases of the nose and accessory sinuses may to a considerable extent implicate the eye (retrobulbar neuritis), so much so that patients may first consult an oculist, great care is essential lest the mistake be made of treating the secondary effect rather than the cause. Confusion with rheumatic headache is most readily avoided by carefully palpating the muscles of the scalp and back of the neck. The commencement of nasal headache in the occipital region, as is the rule in nodular and induration headache, is extremely common.

The greatest diagnostic problems are likely to arise on account of the resemblance between neurasthenia and nasal headache. In both there is mostly a sense of pressure. Only a careful history, together with the findings within the nasal chambers, especially the frontal sinus region, settles the question. Inquiry concerning discharge from the nose, obstruction of one or both nostrils, and disturbance of the sense of smell must not be omitted. It is also imperative that the possibility of a combination of nasal headache with any other form be borne in mind. In such a case the cure of the nasal condition will be followed by persistence or speedy return of the headache. The fact must, in addition, be emphasized that headache may be entirely lacking in the clinical picture of nasal disease, even the most severe, and that long-standing inflammations and tumors may run an entirely painless course. Therefore, one should guard against assuming every positive discovery in the nose to be the cause of a co-existent headache. Again, hysterical headache, much more frequently than neurasthenic, assumes, a neuralgiform character, mostly in the guise of neuralgia of the supra-orbital and occipital nerves, which are at times extremely difficult to distinguish from real neuralgias, since the typical tender points are also present. In keeping with its pathogenesis, however, and often in the highest degree, it is responsive to suggestive treatment, whether hypnotic or waking.

In disease of the teeth, neuralgias in the course of the maxillary and mandibular nerves may occur in addition to local pain. If the teeth of the upper jaw, particularly the molars, are

affected, there is often a severe, dull and boring pain in the corresponding temple, which may often be confused with other forms of headache. Therefore, one must bear in mind that not only dental caries, which is at once recognizable, but also diseases of the pulp, with an intact surface, may give rise to neuralgia and temporal headache, as may also an unerupted third molar. Why in the one case only a localized pain, restricted to the diseased spot, should be felt, and in the other a widespread neuralgia or an obstinate pain in the temporal region, without the nature and extent of the dental condition affording any adequate explanation, cannot be said with certainty. Apart from individual hypersensitiveness, which cannot always be substantiated, there must probably be variations in the anatomical course of the anastomoses which one feels tempted to advance as explanatory of this variable behaviour. On the other hand, we may assume definite treatment, which is enucleation of the tonsils, in a type of protracted headache, seen in chronic follicular sore-throat associated with neurasthenic manifestations (readily produced fatigue, disturbance of sleep), and which may culminate in nocturnal sweats.

As to headaches in diseases of the ear, it is mainly in acute otitis media, both catarrhal and suppurative, that headaches, generally of great intensity, occur; these are at first confined to the corresponding side and are aggravated by the movement of the lower jaw in mastication. If, in the suppurative middle ear disease, perforation of the drum does not soon occur with evacuation of the fluid, the pains radiate all over the head, and are then of a throbbing and pulsating character. In these affections there is always a considerable tenderness on pressure in the region in front of the tragus and on the mastoid process. The otitic headache can usually be recognized by the above peculiarities, and also by the fact that fever is generally present, at least until the drum membrane ruptures or is incised. If the suppuration involves the mastoid process this also becomes the seat of spontaneous pain. The intra-cranial complications dependent upon acute and chronic disease of the tympanic cavity, to the latter of which belongs cholesteatoma, are frequently ushered in by severe headaches, in that case usually accompanied by tenderness on pressure and percussion, and are soon followed by other characteristic symptoms. Every protracted or severe headache should induce one to examine the ears and to inquire concerning former ear disease. The syndrome-complex of Ménière, usually associated with disease of the internal ear (vertigo, tinnitus, vomiting), is generally accompanied by diffuse headache.

Part II

Many times we find that a patient does not do as well as we expect. On further study, we find what we thought insignificant symptoms at first taking their position at the front. As it is generally accepted that the internal secretions of the ductless glands are in some obscure way correlated with the general condition of the organism, then for present purposes it may be sufficient to postulate that in certain measure the general metabolism of the organism is regulated by these secretions.

For illustrative cases bearing on these points I desire to mention briefly the following case histories. There are many facts, established and proven by experiment, which have formed the basis of certain objective methods for the determination of the functional capacities of the several glands composing the endocrine group (Rowe). Were it not for the fact that the performance of the necessary tests is so time-consuming, complex in detail and requires so extensive an instrumental equipment, the examination of these processes as aids to the diagnosis of the endocrinopathies would have a much wider application.

PITUITARY DISEASE

Case 1. The patient was a poorly nourished man of forty-four years of age, presenting as his chief complaint a paroxysmal headache, left frontal, temporal and occipital. The condition started several months ago, with a sudden onset of severe pain in the left shoulder, leg and left hand. The arm and leg were somewhat contracted and the vision blurred. In two days there was recovery with recurrence in seven weeks without paralysis. There had been some headache for over a year past. The patient is intermittently irrational and during attacks is in great fear of death. The memory has also become impaired. He has had occasional vertigo and an indefinite tinnitus. The headache is always frontal, temporal and occipital and of a boring nature. The physical examination shows poor teeth, sluggish knee jerks, left Babinski and Oppenheim, plantar reflex absent on left, ankle clonus present, abdominal reflexes sluggish on left. Marked pilosity is recorded, but as the patient is an Italian, this is robbed of much of its significance. The urine shows a somewhat scanty elimination, but this undoubtedly is referable to the patient's low food intake; a trace of acetone in one specimen confirms this idea, one specimen shows a s.p.t. of albumin and one "urobilinogen". Beyond a rare hyaline cast the sediments are negative. The nitrogen partition confirms the inference regarding the food intake and shows a normal formula. The phthalein test is normal. Sugar tolerance is also normal. The blood morphology shows a leucocytosis with a preponderance of the neutrophilic elements, and there is a 4% eosinophilia. The serological examinations are negative. As the patient was bedridden, his weight was calculated and he is somewhat below the weight estimated from his sitting height. His lung capacity is about half the calculated amount. The basal metabolism shows a practically normal rate with slow pulse and low blood pressure. Alveolar CO_2 was normal as was the salol test. The X-ray showed the left frontal sinus and antrum slightly obscured, large diploic veins and erosion of the posterior walls of the sella. The eyes show papilledema of both nerve heads, signifying intracranial lesion.

Diagnosis. The patient presents a pituitary tumor with resultant intercranial pressure. While certain of the characterisic findings of pituitary disease are recorded, the functional level of both lobes at the

time of observation is substantially normal. The gland presents a marked hyperplasia without change in function.

CASE 2. The patient was a tall, slim woman of forty-four years of age, with a somewhat protruding and noticeably square lower jaw. Her presenting complaint is of headache, from which she has suffered for twenty years, with an increasing severity up to eight years ago, since when the attacks have abated in intensity but have increased in frequency. At onset, the attacks appeared at intervals of six weeks or more and lasted from one to several days. More recently the interval has shortened to one or two a week. Eight years ago, at the period of greatest severity, she developed sinus trouble requiring operation. X-rays taken at this time disclosed a pituitary tumor.

The headaches begin over one eye and gradually extend over the whole upper half of the skull. Heat or cold may bring some relief. The family has shown much cardio-renal disease and there are cases of tuberculosis and cancer in near relatives. During the last few years, the patient has been under a severe nervous strain nursing her invalid mother and sister, both of whom died recently. Her own history records the minor ailments of childhood, scarlet and rheumatic fevers and several attacks of influenza (one with pleurisy) in later years. She was undersized until the age of sixteen, at which time she established the catamenia and grew very rapidly. The menstrual history is substantially normal. She always has headache at the end of a period. Other pertinent points in the history are photophobia, some vertigo and recently some degree of nervous instability.

The physical examination shows a protruding and noticeably square lower jaw, sallow complexion, infected, ragged tonsils, a friction rub over upper half of left lung, possibly palpable left kidney, slight pilosity of legs and very active knee jerks. The hands and feet are not enlarged. The urine shows a normal volume, fair elimination, and contains albumin and an occasional hyaline cast, with renal tubule and bladder cells presenting evidence of renal irritation. The nitrogen elimination shows a protein intake below a maintenance level. The residual nitrogen fraction shows a borderline high value. The phthalein test is below the normal, the galactose tolerance somewhat low; the urea curve is of the flat type with poor elimination. The blood morphology shows a fairly normal blood with slight lymphocytosis. The blood chemistry shows low values for all nitrogenous constituents, but the blood uric acid is relatively high. The serologicals are negative. The patient is 20% under weight with normal lung capacity. The basal rate is recorded as—4%,* with slightly slow pulse and a definite low-grade hypertension most marked in the diastolic pressure. A nose and throat examination confirms the tonsil condition. An X-ray shows some thickening of the membrane in the antra and very definite evidence of a pituitary tumor of a slow growing type. The eye examination shows pale yellow discs.

Diagnosis. The picture here presented is one of a mild degree of pituitary dysfunction with the anterior lobe under-active (lowered basal rate) and the posterior over-active (lowered galactose tolerance) associated with hyperplasia of the gland. The present status, in conjunction with the history, implies a probable earlier hyper-activity which is now undergoing functional involution, in which latter process the anterior lobe has already reached a hypofunctional state. This determines a fairly common formula of pituitary disease. A point of interest lies in the fact that the patient's eye tests are not comparable with the severity of the presenting symptom if intercranial pressure were the sole etiological factor.

*This value is certainly well above the truth, as the patient was nervous and somewhat restless.

CASE 3. The patient is an obese elderly woman of 71, with marked loss of hearing but otherwise outwardly well preserved. Her chief complaint, aside from the deafness is of severe, dull, boring headache which first began five years ago. She relates that on stooping over something seemed to snap in the head. This was followed by a severe headache lasting three days. There was no recurrence for over a year and then the headaches recurred at first at intervals several months apart but with progressive frequency, so that during the last year they have come on an average at three-week intervals. A typical attack is described as follows:

The pain started in the night without warning and lasted about twelve hours. It was a severe, deep, boring ache. She at once took powders recommended by her local physician (some form of narcotic drug the nature of which could not be ascertained) and ultimately this medication helped the condition.

The sensation is always deep in the head, begins over the frontal area, extends to the occiput and is a boring, violent, thumping sensation. Following the attacks she feels exhausted and sleeps many hours if undisturbed. The attacks are never accompanied by nausea or vomiting and she is never dizzy. Polyuria always accompanies the headaches. The family history shows several cases of cardio-renal disease. The patient's own history records a nervous breakdown in 1895 necessitating a residence of seven months in a sanatorium. The right breast was removed twenty years ago because of a benign tumor and she had a pelvic operation, probably a ventral suspension, somewhat earlier. She has only lost six teeth. Her menstrual history is essentially uneventful. Physical examination shows marked senile skin changes, very marked deafness in both ears, the presence of much dental work, an apparently normal heart, negative lungs, Heberden's nodes prominent in fingers and knee jerks hard to elicit. The urine shows a normal volume and an elimination which is fair considering the patient's age and dietary restriction. Her protein intake is at a somewhat low level. The galactose tolerance is well above the normal, a positive response being elicited first with 60 grams. As the post-menopausal level lies in the neighborhood of 30 grams, this in an increase of nearly 100%. The urea curve is normal although the elimination is only fair. The blood morphology shows a slight secondary anaemia and there is a definite lymphocytosis. The blood chemistry shows a high uric acid with the other nitrogenous constituents at a normal level. She is 14% overweight and shows a significant reduction from her predicted lung capacity. The basal rate is recorded as —11% with a second observation at —15%. The pulse and blood pressure are both normal for one of the patient's age. The orthopedic examination shows the postural curve of old age with a compensation lordosis; the joints show characteristic hypertrophic spurring but are otherwise negative. X-ray plates confirm these latter findings, show the right mastoid cells to be obscured and demonstrate an erosion of the posterior wall of the sella. The eyes show yellow discs, slightly enlarged blind spots, and some cutting of the form fields most marked on the right side.

Diagnosis: This case is one of bilobar pituitary failure with hyperplasia of the gland.

Comment. A characteristic of these headaches is that they usually stop at once on lying down, to begin again on the upright position. Generally they are very disabling and persistent, but they are also paroxysmal. They are of a boring type, usually bitemporal, and very intense. They are usually sensed as confined within the head

and tend to cause the patient a good deal of drowsiness. Every pituitary case, however, does not have headache and occasionally as a symptom it is never mentioned.

THYROID DISEASE

CASE 4. This patient was a young woman of 30 presenting the characteristic picture of well-marked exophthalmic goiter. While this was naturally her chief complaint, she emphasized headache as one of her most distressing symptoms. These headaches began in early childhood; they usually start in the frontal region, left or right, and extend throughout the entire head; stooping or bending increases the severity. The attacks are persistent, cause a confused feeling and oblige her to lie down, preferably in the dark. With an attack vertigo is usually present, but this varies much in severity. Commonly the room seems to oscillate in all directions; there is marked tinnitus and a lessened acuity of hearing. The family history shows malignant neoplasm in the mother and one brother. The patient's own history is not remarkable beyond the account of the progress of her thyroid disease, which was first noted nine years ago and has since been steadily progressive. Loss of weight, dyspnoea, tachycardia, tremor, nervous instability, menstrual irregularity, and gastro-intestinal disturbances are all referred to the thyroid disease. Physical examination shows good development with some emaciation; the patient is extremely nervous; the hair on the vertex is dry and thick, there is very marked exophthalmos; the tongue shows tremor on protrusion; many teeth are missing; the tonsils are enlarged and cryptic; and there is a bilateral enlargement of the thyroid gland; the heart shows several abnormalities including a tachycardia which reached 186 beats per minute; her blood pressure at the time of the examination was recorded as 190/80, which was certainly a reflex of her profound nervousness; (her systolic level at the time of her basal test was 135:); a slight enlargement of the liver was recorded; the tendon reflexes were exaggerated and there was marked tremor of the hands with an occasional coarse tremor of the head. The urine volume is scanty, elimination inadequate. A slight trace of albumin and increased indican are reported, while the sediment is negative. The protein intake is definitely below maintenance, and in view of the patient's hyperthyroidism is entirely inadequate. The formula shows a slightly high residual nitrogen. The blood shows a slight secondary anaemia with normal leucocyte formula. A high borderline uric acid is the only abnormal feature of the blood chemistry. The serologicals are negative. The phthalein test is a low borderline value. The patient's sugar tolerance is much below the normal amount. She is 14% underweight and has lost nearly two-thirds of her predicted lung value. Alveolar CO_2 is normal. The basal rate is recorded as +47%, a fair average value in comparison with other records. The blood pressure is normal; the pulse varies from 84 to 132. Cardiogram shows auricular fibrillation. The patient shows yellowish discs, the fields are markedly and symmetrically contracted, and the blind spots are enlarged.

Diagnosis. The primary diagnosis here is exophthalmic goitre with hyperactivity of the gland and a related cardiac condition. An interesting feature is found in the two anomalous observations of the markedly low sugar tolerance and greatly contracted form and color fields. Hyperthyroidism usually produces only a very moderate drop in the galactose tolerance. In the present case the two anomalies are referable to a concomitant liver disorder. As is well known, this produces a marked lowering of sugar tolerance; marked symmetrical contraction of form and color fields has been observed in an extended series of liver and gall bladder cases*.

CASE 5. The patient was a man of 47, complaining of frequent attacks of light-headedness similar to vertigo but differentiated in that he does not deviate from a straight line in walking and closing the eyes does not lessen the sensation. The attacks have been progressive in frequency, they are usually ushered in by an increase of a whirling sound in one or both ears and may appear at any time. The mother died of cancer. The patient presents a long history of gastro-intestinal disorder with an appendectomy three years ago, and the identification of a duodenal ulcer which has apparently been corrected by dietary regulation within the last year; he has had much trouble with nasal obstruction, with operative intervention which has been only partially successful. There is also an ill-defined asthmatic tendency. Physical examination was entirely negative. The nitrogen partition shows a normal protein intake, the residual nitrogen fraction is above the normal. The blood morphology is not remarkable except for a slight lymphocytosis, which equates with the high residual nitrogen. The blood chemistry is normal, and the serologicals are negative. The phthalein test is distinctly below normal although the curve of elimination conforms to the convention. The patient's galactose tolerance is definitely lowered, the urine showing a trace of sugar with a dosage of but 10 grams. He is 2% underweight by the Dreyer standard, but his sitting height index is below normal. This would imply that the underweight is actually in excess of recorded figures. Urobilinogen is negative. The basal rate at the time of the examination is —2%, but earlier records show a variation about +20%. X-ray plates of various parts of the body, including a gastro-intestinal series, were negative, as was a neurological examination and a series of endermal tests. The eye examination showed yellow discs; a nose and throat examination demonstrated infected tonsils. A duodenal function test showed some biliary disturbance while the Graham test by the intravenous route was negative.

Diagnosis. The patient's past history and current findings define a mild dysfunctional state of the thyroid following an earlier hyperactive condition. This condition is frequently associated with focal infective processes, and in the present instance the tonsils were seriously infected. In addition, a dysfunctional state of the liver was demonstrated, to which may be referred the abnormal sugar tolerance. At the time of the first observation the thyroid was in a transitional state of functional involution. Later measurements demonstrated a clear-cut progress toward terminal hypofunctional condition.

CASE 6. This patient was a youth of 16, tall, well nourished. He has had trouble with both ears lasting from 2-7 days, every 4-5 weeks since childhood. It followed an early attack of pneumonia in infancy. During the past 4 or 5 years the attacks have been accompanied by pain and tenderness. As the attack terminated, the exudate from the canals increased in amount. Intermittently through the years he has had a sense of pressure, at times giddiness and tinnitus. However, the tinnitus was not associated with the activity of his ear canals. The headache was not localized in any part of the head; it often gave him an expression of lassitude and depression. He expressed the sensation aptly as a general heaviness throughout the head, wishing that he might only rest his head on something soft. The lassitude and depression have been greatly helped by several tonsillectomies. He had the usual children's diseases, four attacks of pneumonia and is very susceptible to colds. While the boy is entering college this

*Unpublished data. Personal communication from Dr. A. W. Rowe.

year, it has been very difficult for him to keep appointments on time and to acquire the study habit. The physical examination shows a dry skin, some dandruff, enlarged turbinates and thickened, red lateral walls of the pharynx. Both ears are occluded wth exudate and skin, the underlying parts red and tender and bathed with moisture. Both drums are negative as are the mastoids and middle ears. He shows a normal audiogram for both ears. There are many comedones in both conchas and about the auricles. The urine volume is normal, elimination good, balance fair. Protein intake is adequate, nitrogen partition normal, one specimen shows albumin, the sediment negative. Blood morphology shows a definite lymphocytosis. Blood chemistry is normal. Serologicals are negative. The phthalein test is slightly below normal. The galactose tolerance is definitely depressed. The patient is 10% underweight and with a normal lung volume. Two confirmatory basal tests show an average rate of —18% and a slightly slow pulse. X-ray examinations of the sinuses and ears are negative. An eye examination is normal except for marked cutting of the upper fields due to lip drop. A cardiogram shows a normal heart, while an abdominal examination shows nothing of note. A duodenal function test showed some biliary disturbance.

Diagnosis. The pathology in this case is certainly not clearly defined. The low basal rate, a low sugar tolerance and a lymphoid blood are the principal departures from normal. These would be consistent with a pituitary dysfunction, but none of the other findings are confirmatory. The cutting of the upper fields together with a positive liver dysfunction resolves the case to a thyroid failure coupled with disturbance of the biliary system. This combination of a liver dysfunction coupled with hypothyroidism is being frequently remarked in this clinic. The relative causality is under investigation.

Comment. In Case 4 there is an exophthalmic goitre with hyperthyroidism, while Case 5 is a thyroid dysfunction in a transition state and Case 6 one of hypothyroidism. Each of these cases shows active liver dysfunction as well. The headache is usually an earlier symptom in hyperthyroidism. In general it is migrainous in character, usually accompanied by giddiness and tinnitus. It is also very often accompanied by attacks of depression as well as by attacks of excitation.

GONAD DISEASE

Case 7. The patient was an obese young girl of 19, an orphan presenting behavior problems involving dishonesty and perverse sexuality. This had been earlier diagnosed as a case of constitutional psychopathic inferiority, she had been committed, and at the time of the examination was on parole. She complained of a constant dull sensation throughout her head, but generally it seemed to concentrate at the nape of the neck. With the dull, heavy feeling constantly present there are times when she has neuralgic flashings that include the entire head, and then nausea and vertiginal feelings follow. The family history is negative. The patient's own story records only minor ailments, a tonsillectomy; the remaining history, including that of the catamenia, is not significant. The physical examination shows a rather gross general development and facial expression, an obesity more marked in the body than the extremities, teeth are moderately carious, a chest which shows some flaring at the costal margins with flattening of the normal thoracic curve, marked septal deviation, a slight inguinal adenopathy, and acniform eruption on face and chest. The patient is somewhat slow mentally but not markedly unintelligent. The urine gives a generally normal picture, the elimination and balance being good. Nitrogen partition is normal. Phthalein test is slightly below normal. The patient is positive with 20 grams of galactose, a definitely decreased tolerance. Urea curve is normal in outline but elimination is poor. Urobilinogen is negative. The blood morphology shows a slight relative lymphocytosis. Blood chemistry is normal, the blood sugar being a low normal. Serologicals are negative. The patient is 23% overweight. CO_2 is normal. The basal rate is reported as +5% with a slightly febrile temperature and patient slightly restless. The blood pressure at time of this test is somewhat higher than in the other independent measurements and this and the febrile temperature indicate that the observed basal rate is certainly above the truth. The pelvic examination shows sparse pubic hair and is otherwise negative. The Barany test shows an almost total lack of response to stimulation, which is probably of congenital origin. A neurological examination confirms the earlier diagnosis on constitutional psychopathic inferiority. X-ray shows a deep sella which is not significant. Eye examination shows only yellow discs, otherwise negative.

Diagnosis. The general picture here is consistent with a primary functional ovarian failure. Neither the normal menstrual history nor the patient's sex delinquencies are incompatible with this condition.*

Case 8. This patient was a woman of 51, both of whose ovaries had been removed 16 years before. She had suffered from headaches more or less constantly for over twenty years. They are generalized throughout her head, usually being more intense during morning hours. During the beginning of a seizure she is troubled with attacks of weakness more or less throughout her body. At other times the attacks seem to start in either the left or right ear with an intense surging, whining sound, together with slight numbness in her legs; she feels giddy and has the sensation of floating into space. Her sleep, which is usually very good, is always disturbed during one of these attacks. Prior to her bilateral oöphorectomy she noted that the attack was accentuated at the menstrual period. The family history shows nothing but a rather frequent incidence of asthma, from which the patient also suffers. In addition to the operation noted above she records only minor ailments. Physical examination shows an emaciated and poorly developed woman, slight flushing over the malar bones, eyelid tremor when closed, teeth in good condition but show much dentistry, a long narrow chest with small breasts, hyperresonance over most of the thorax, slight lumbar scoliosis. The urine is scanty in volume, the elimination is poor; small amounts of albumin and increased indican are recorded. Both sediments show many leucocytes, and in one fatty casts are observed. The nitrogen partition is normal considering the low level of nitrogen elimination. The phthalein test is definitely below the normal level. The patient's galactose tolerance is half that of the normal, which would accord perfectly with her history of ovarian operation. The urea curve is of the progressive type which speaks more for a pyelitis than for a nephritis. Urobilinogen is negative. The blood morphology is substantially normal in respect to erythrocyte count but shows a lymphoid type with a 7% eosinophilia. This latter again is unquestionably referable to the patient's asthma and without any endocrine significance. The blood sugar is a low normal level. This is interesting in the light of the patient's extensive adrenalin medication. The Wassermann is negative. She is 33% underweight and her vital capacity is recorded as 63% below prediction. Two basal determinations show a consistent rate of —16%, a low blood pressure, practically normal pulse and temperature. Endermal tests show the patient negative to a number of sub-

*The patient has shown marked clinical improvement and a normalizing of the laboratory picture under ovarian medication.

stances of common contact. X-ray examination shows a long narrow thorax, increased density and mottling of both lungs, a right lumbar scoliosis, dislocation of the left hip, obliteration of the right sacro-iliac, and several retained roots. The eye examination is substantially negative; there is a very slight contraction of the fields which is probably not significant.

Diagnosis. The present condition is a clear-cut hypogonadism, initially functional in character but for the last 16 years surgical in origin.

Comment. Both of these cases are ovarian failures. The first, purely functional in character, while the second derives from castration. The possibility of a causal non-endocrine condition in the second case makes it a somewhat less satisfactory illustration than the other cases here reported.

MIGRAINE OF NON-ENDOCRINE ETIOLOGY

CASE 9. The patient is a fairly well developed man of 48, who from early childhood has had severe left unilateral headache, starting in the left supra-orbital region and radiating along the whole left hemicrania, followed by nausea and vomiting, the attack lasting up to thirty-six hours. The attacks are atypical of migraine and eight other members of the family have it, only one child having escaped. The attacks are more frequent and more severe than formerly, occurring about every two weeks. During the attack there are throbbing pains in the head synchronous with the heart beat. His head feels heavy and dizzy about two days before the attack. Nothing in particular relieves it and there are no eye or ear symptoms. The vomitus is very sour and consists of food and bile. For the past ten years he has had also attacks of epigastric pain with marked constipation, and these attacks were so bad that eight years ago he had an exploratory laparotomy with negative findings except that the appendix was removed. The physical examination shows a moderate degree of baldness and rather abundant body pilosity, patient is jaundiced, eyes are rather prominent with a slightly yellowish tint to the conjunctivae, tonsils irregular and cryptic. The family history shows several cases of cardio-renal disease and one of cancer. The patient's own history is devoid of significant facts other than those given above. Urine shows normal volume, low elimination, and is otherwise negative. Nitrogen partition normal with perhaps a slight upward tendency of the residual nitrogen. Blood morphology shows lymphoid blood with a 4% eosinophilia and slight basophilia. The blood chemistry is normal as are the serologicals. The phthalein, CO_2, and vital capacity are all normal. The basal rate is —16% with lowered blood pressure. X-ray of the skull was negative except for undeveloped frontal sinuses. The neurological examination was also negative. The sugar tolerance shows a marked depression, giving a positive response with ten grams. The eyes show a slight enlargement of the blind spots. An intravenous Graham test was negative. A complete duodenal test (McClure) gave marked evidence of disturbed liver function.

Diagnosis. This case presents no evidence of endocrine disease, the lowered sugar tolerance being referable to the liver condition. The diagnosis is a liver dysfunction.

CASE 10. The patient was a well-developed, obese woman of 47. For 30 of her 47 years she has had intense, disabling headaches, first beginning in the occipital region, but during the last five years involving the entire head, although most severe in the frontal and parietal regions of the right side. They seem to be especially severe at the menstrual time and of greater frequency. There seems to be a constant sensation of swelling and pressure inside of her head. They frequently awake her in the morning and many days last throughout her waking period. There are times that there is a good deal of fatigue with the headaches. The family and marital history are not significant. The patient records minor ailments, recurrent tonsillitis finally corrected by operation, inflammatory rheumatism seven years ago. She has had two T & A operations, the removal of a lipoma from the back, and a ventral suspension. She is not deaf but has a sensation of closure and pressure in the ears on awakening. The right sinus was operated eight years ago and still occasionally discharges. Frequent attacks of pain in the heart with some dyspnoea and palpitation are recorded. She presents a general history of gastro-intestinal disturbance, some indigestion associated with the headaches, and chronic constipation. The menstrual history is negative. Physical examination shows a tendency to girdle obesity with poor posture, heart normal, with some tenderness over the gall bladder and McBurney's point, small varicosities on legs, slight arthritic changes in hands and knees but otherwise negative. Blood morphology shows pronounced lymphocytosis. Blood chemistry shows slightly high uric acid. The urine is negative except for a high residual nitrogen fraction. Serologicals are negative. Phthalein test is a low borderline. She is 14% overweight; lung volume practically unimpaired. Basal rate is —14% with a slightly lowered blood pressure and subnormal temperature. X-ray shows obscured antra, while the Barany is negative, as are the ears. The pelvic examination is negative. The neurological examination shows the patient somewhat slowed down and with a marked fine tremor of the hands. Her sugar tolerance is half the normal. Eyes show yellowish discs, enlarged blind spots, and a cutting of the upper fields due to lid droop. The endermal tests show sensitivity to several of the common foods. A duodenal function test (McClure) shows marked disturbance of liver function.

Diagnosis. The patient is not endocrine, but gives clear-cut evidence of a liver dysfunction, probably associated with gall bladder disease, and of a questionable appendix.

Comment. Cases 9 and 10 are migraine, the focus showing as a dysfunctional state of the liver. An accurate history is always helpful and may indicate several foci as causative factors. The characteristics are that the unilateral pains are about twice as frequent as the bilateral; the former are rather more frequent on the left than on the right side, while it is frequently noted that the side varies in different attacks. The pain is, almost without exception, referred to the sinciput and deeply in the interior of the skull, never externally. Most frequently it is in the region above the eyes, in the center of the forehead, the temples, and the root of the nose. In severe cases it may extend to the upper jaw and the occiput, or even into the nape of the neck. The degree of pain varies from trifling sensations to unbearable agony. Many patients are able, with an effort, to pursue their avocations, others become almost demented. The pain is most frequently described as boring or gnawing, and not uncommonly seems as though it would burst the skull asunder. All strong sense impressions, particularly bright light and noises, are appreciated as pain.

SUMMARY

This paper seems to resolve into the fact that the nutritional level of the patient has a direct influence on the underlying increase or decrease of the symptom, headache. However, headache is seldom the result of a single focus, but rather is it the effect of several apparently dissociated conditions, i. e., focal infections or intoxications in various parts of the body, especially the intestinal canal. On the other hand, the patent endocrine influence would seem to derive from their influence on the general metabolism. The pituitary may be an exception to this; as certainly in cases presenting hyperplasia of the gland with a resultant intracranial pressure. Again, headaches in gonad disease are constant, are associated with menstruation and have an exacerbation period of added neuralgia, depression, and intensiveness usually cyclic in character. While the thyroid cases here cited are all liver dysfunction, it does not follow by any means that this is a constant factor. Finally, in a series of a thousand consecutive case histories that I have studied, the order of frequency of headache as a presenting symptom correlates with the etiology as gonad, adrenal, pituitary, thyroid and pancreas, and that it is generally more frequent in hypo- than in hyper-functional states of the ductless glandular system.

FRACTURE OF THE SURGICAL NECK OF THE HUMERUS WITH DISLOCATION OF THE HUMERAL HEAD, SUCCESSFULLY TREATED BY A CLOSED METHOD*

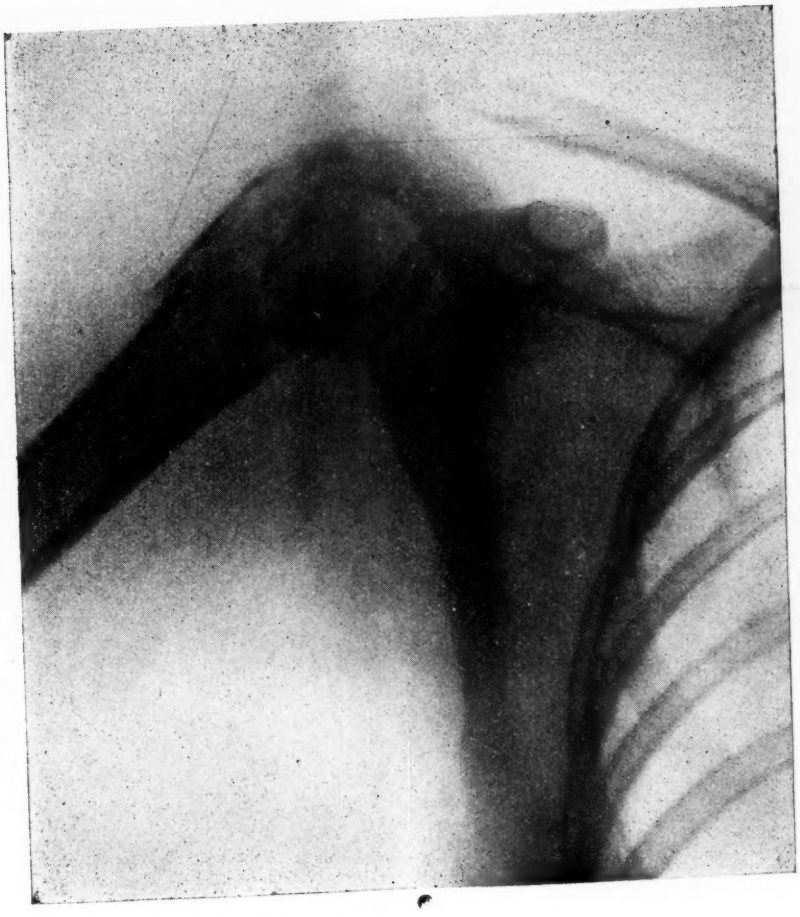
BY HAROLD G. LEE, M.D.†

RADIOGRAM 1.

FRACTURE of the surgical neck of the humerus associated with dislocation of the humeral head is fortunately a rare lesion, there being no cases reported until 1823, when Delpech[1] reported a case observed by Hauzelot in 1808. McBurney[2], in 1894, was able to find 117 cases in the literature. Mason[3] had found 63 additional cases in 1908.

*From the MacAusland Orthopedic Clinics.
†For record and address of author see "This Week's Issue," page 204.

RADIOGRAM 2 (a).

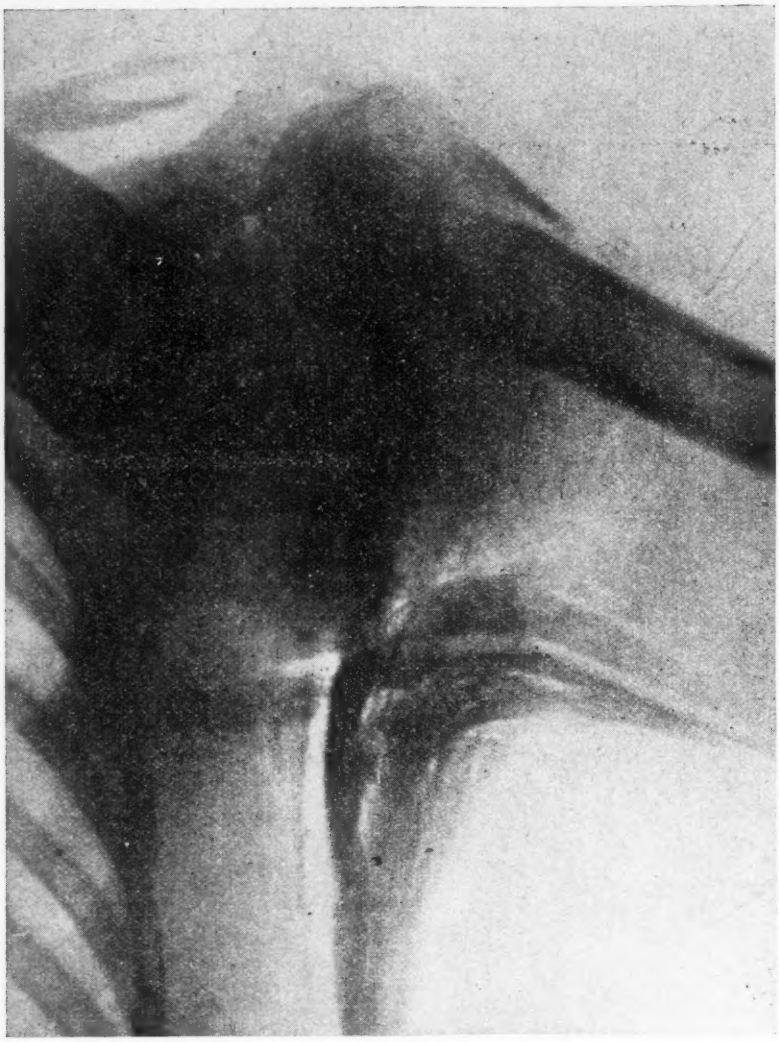


RADIOGRAM 2 (b).

In 22 cases observed and reported by Buchanan, a fall was the cause in each instance. The mechanism of these combined lesions is difficult to understand. The older authorities did not agree as to which occurred first, the fracture or the dislocation. It would seem logical to assume, where direct trauma such as a fall is the cause, that the fracture occurs first.

The treatment until 1894, when McBurney first used his hook to reduce the dislocated head, had been mainly to allow the fracture to unite and then attempt reduction of the dislocation. The results were naturally poor. Buchanan in 1908 states: "There is no recorded case of anatomical neck fracture with dislocation in which reduction has been accomplished by external means and line of fracture verified by autopsy or X-ray. Unverified cases make it incumbent on the surgeon to make an effort at reduction if the head can be moved without undue violence." Restoration of the dislocated head and reduction of the fracture by open operation is the only alternative when manipulation fails. In 29 cases alluded to by Buchanan, 12 were not subjected to operation. Of the remaining 17, the head was excised in 14.

An attempt has been made to determine in what proportion of the reported cases restoration of the head and reduction of the fracture has been accomplished by the closed method. Mason reports six successful attempts in 63 cases.



RADIOGRAM 3.

The following instance is given as a verified successful closed reduction with rather prompt return of function:—

A. B. Seen in consultation with Dr. Frank Lewis of Nantucket, Massachusetts. The patient was thrown from a horse and gives a history of attempting to fall after the approved method of football players without success. Examination showed the shoulder to be swollen and tense but with no loss of nerve control or disturbance of sensations or of blood supply. Radiogram 1 shows fracture and dislocation.

Operation—With the patient under deep surgical anesthesia, the shoulder was carefully washed and dried with alcohol and ether preparatory to open operation, if manipulation was unsuccessful. With

the elbow flexed to a right angle, moderate traction was exerted away from the body while the head of the humerus was gently manipulated outward. Traction was gradually increased, bringing the arm forward, at the same time increasing the pressure of the fingers on the loose head in the anterior axilla. Bony crepitus was felt as the arm was carried in toward the midline of the body. The head slowly slipped over the edge of the glenoid and into the cavity with a snap heard throughout the operating room. The contour of the shoulder was restored and gentle rotary motion of the humerus rotated the humeral head. Radiogram 2 shows that reduction of dislocation and fracture had been simultaneous. A plaster abduction spica was applied with arm in about 70 degrees anterior to the sagital plane.

Radiogram 3 shows position in plaster.

The following morning the patient was comfortable; there was no undue swelling of the fingers; the circulation was excellent. The plaster was worn three weeks; then the upper shell was removed. Baking with gentle passive motions was started.

Radiogram 4 taken six weeks after operation. Reduction perfect, union taking place.

RADIOGRAM 4.

Three months after operation the shoulder has full abduction and can be adducted to the chest with only the slightest prominence of the scapula. External rotation is still limited. The periarthritic thickening is gradually absorbing.

REFERENCES

1 Quoted by Buchanan, J. J.: Annals of Surgery, 1908, XLVII, 659.
2 McBurney, Chas.: Annals of Surgery, 1894, XIX, 399; 493.
3 Mason, J. M.: Annals of Surgery, 1908, XLVII, 672.

VERMONT STATE MEDICAL SOCIETY

VERMONT DEPARTMENT OF PUBLIC HEALTH

REPORT FOR JUNE, 1928

The incidence of communicable diseases during the month has been as follows: chickenpox 63, diphtheria 1, measles 248, mumps 42, scarlet fever 32, typhoid fever 1, tuberculosis 23 and whooping cough 84.

Arrangements have been made with the University Extension Service to take over the work of the test for White Diarrhea of Fowls, and the Extension Service is proceeding to equip a laboratory in order to do this work by September first.

The Engineer and the Chemist are in correspondence with a large number of camps regarding water supplies and other sanitary arrangements, and these camps are daily sending in samples of drinking water for analyses.

The following specimens were made at the Laboratory of Hygiene:

Examinations for diphtheria bacilli	87
" " Widal reaction of typhoid fever	32
" " Malarial parasites	1
" " tubercle bacilli	242
" " evidence of syphilis	364
" of gonococci in pus	102
" " blood for contagious abortion in cattle	25
" " blood for white diarrhea of fowls	69
" " water, chemical and bacteriological	100
" " water, bacteriological	103
" " milk, market	39
" " milk submitted for chemical only	8
" " milk submitted for microscopical only	32
Examinations of foods	21
" for the Courts, autopsies	4
" " the Courts, miscellaneous	30
Miscellaneous examinations	58

The Division of Communicable Diseases makes the following report:

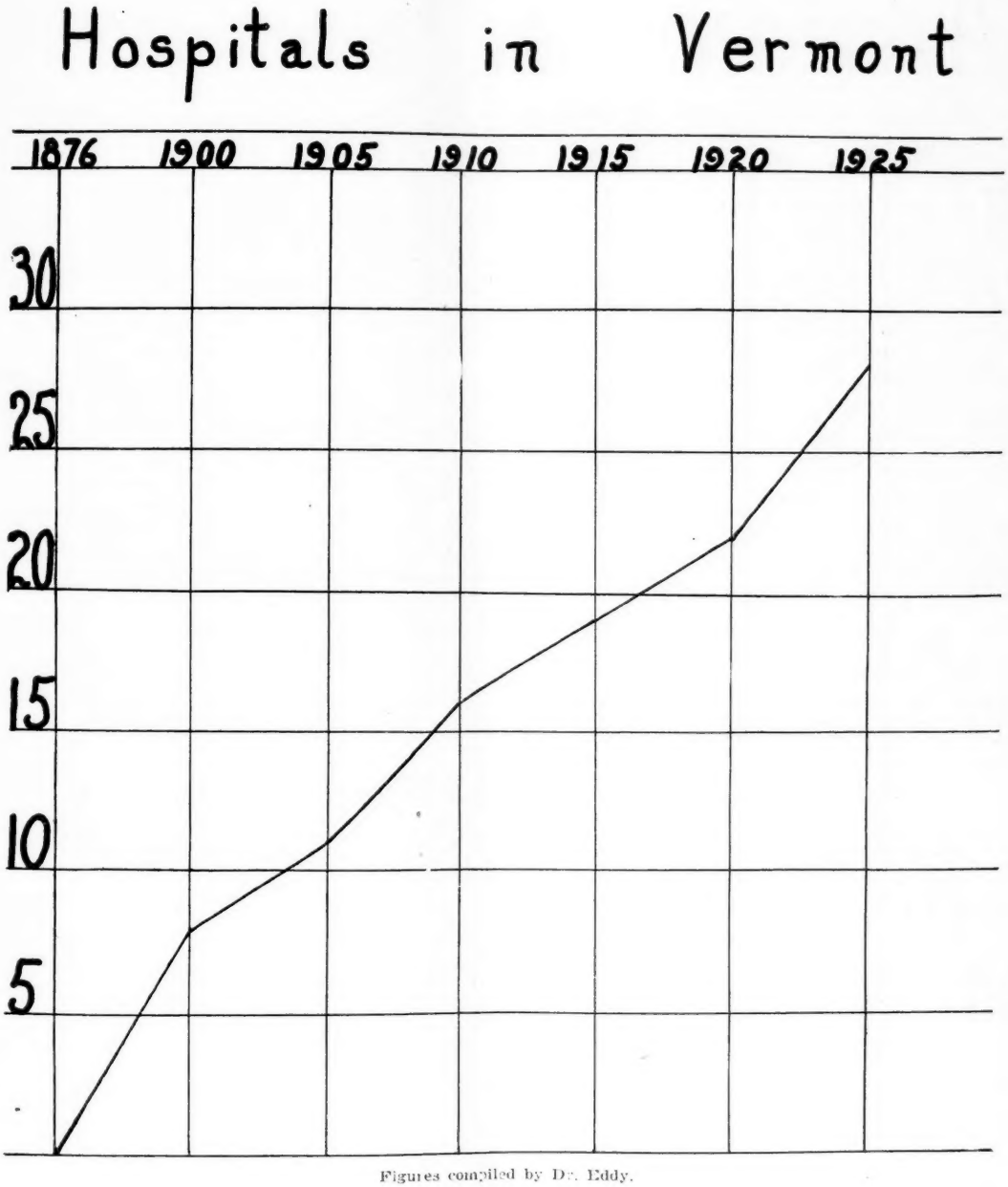
Cases of gonorrhea reported	43
" " syphilis reported	64
" " gonorrhea reporting for treatment	2
" " syphilis reporting for treatment	14
" for intravenous treatment	14
Total treatments	88
Gonorrhea outfits distributed	166
Wassermann outfits distributed	611

The Division of Aftercare for Poliomyelitis reports 87 patients seen, 73 home calls made, 48 pieces of apparatus fitted, 55 orthopedic corrections were made to shoes, 25 pieces of apparatus were altered or repaired, five patients admitted to the Fenway Hospital in Boston and three patients discharged from the hospital. Sales from articles made under the direction of the vocational teacher amounted to $24.82.

In the Division of Maternity and Infancy, the nurse visited 15 towns, one of which was Portland, Maine, at the invitation of the New England Council for Parents and Teachers.

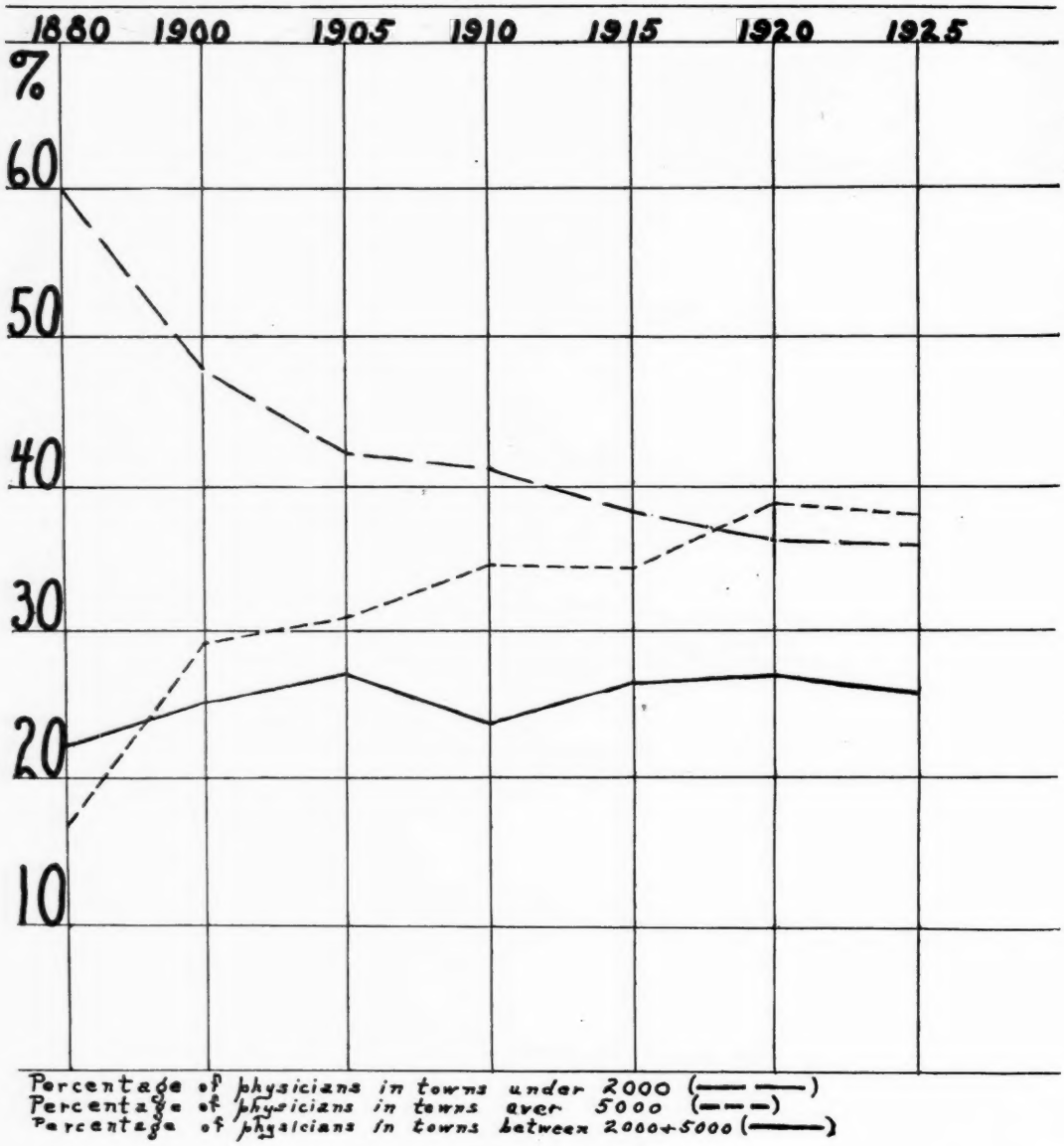
N. E. HEALTH INSTITUTE IN SEPTEMBER

The date of the New England Health Institute to be held with the Vermont Department of Public Health at Burlington has been set for September 24, 25 and 26. Dr. Charles F. Dalton, Director of the Institute, has appointed the following committee: Mr. H. W. Slocum, chairman; Mr. C. P. Moat, Dr. F. S. Kent and Miss Nellie M. Jones, to have charge of the arrangements. Several prominent speakers have been planned for and the outlook is for a most interesting session.



Figures compiled by Dr. Eddy.

Distribution of Physicians in Vermont



Figures compiled by Dr. Eddy.

PATIENTS IN STATE HOSPITALS FOR MENTAL DISEASE: 1927

VERMONT

Preliminary Report

Washington, D. C., June 27, 1928.—The Department of Commerce makes the following announcement for the State of Vermont concerning results of the 1927 census of mental patients in state hospitals.

The Vermont State Hospital had a total of 152 first admissions during the year 1927, as compared with 160 in 1926, and 164 in 1922.

These first admissions represent patients received during the year, who had not previously been under treatment in any hospital for mental disease. Such newly admitted patients afford the best available measure of the number of new cases of mental disease which are brought under hospital treatment during a given year.

The decrease in the number of first admissions to The Vermont State Hospital between 1922 and 1927 represents a still larger decrease, relative to the population of the State, as shown by the fact that the first admissions in 1927 numbered 43.1 per 100,000 of population as compared with 45.4 in 1926, and 46.5 in 1922.

The extent to which provision has been made for state treatment of mental patients is indicated by the number of patients present in the state hospitals on a given date. In Vermont, the number of mental patients under treatment in the state hospital has increased steadily from 572 on Jan. 1, 1910 to 838 on Jan. 1, 1928.

This increase was relatively much greater than the increase in the population of the State from 1910 to 1928, since on Jan. 1, 1928, there were under treatment 237.8 patients to 100,000 of the general population with 160.7 patients per 100,000 on Jan. 1, 1910. The number of patients under state hospital care, per 100,000 of the population, showed an especially rapid increase during the year 1922.

Of the first admissions in Vermont during the year 1927, 90 were males, and 62 were females; and of the patients present on Jan. 1, 1928, 444 were males, and 394 were females.

These figures are based on reports furnished by the institutions, with the coöperation of the State Department of Public Welfare. The figures for 1927 and 1928 are preliminary and subject to correction.

Year	First admissions during the year		Patients present January 1	
	Number	Per 100,000 of general population*	Number	Per 100,000 of general population #
1928	...	....	838	237.8
1927	152	43.1	835	236.9
1926	160	45.4	829	235.2
1923	...	....	784	222.5
1922	164	46.5	757	214.8
1910	...	....	572	160.7

*Based on estimated population July 1.
#Based on estimated population January 1, 1928, 1927, 1926, 1923, and 1922; and enumerated population April 15, 1910.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in Vermont, 1927.

Area	Number--1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
	7,022	4,883	490	19.9	20.3	13.9	14.8	69.8	72.0

MEDICAL PROGRESS

PROGRESS OF NUTRITION

BY FRANCIS LOWELL BURNETT, M.D.*

NUTRITION AND CELL LIFE

"THE fundamental fact of life is the metabolism of living substance, which is continually and spontaneously undergoing decomposition and building itself up anew with the help of food substances it takes in. . . . It is conceivable that the decomposition of food-stuffs and the formation of excretion-products in the cell body are caused by the repeated casual encounter of . . . a single class of chemical combinations whose tendency is to be constantly undergoing spontaneous decomposition and regeneration. . . . Among the organic matters which compose living substance, proteids perform the most important part. . . . They . . . form the greater part of all the organic compounds of the cell, . . . and are by far the most complicated of living substance. The proteids and their compounds . . . are . . . stable . . . , whereas the hypothetical combination which lies at the center of organic metabolism is extraordinarily labile and continually undergoing spontaneous decomposition. . . . We have to think, therefore, not of ordinary proteids . . . but of still more complicated combinations, the atoms of the molecule of which have a strong tendency to group themselves in new arrangements. Owing to their fundamental importance, these combinations have been termed 'biogens'. When we come to inquire how such labile biogen molecules are built up out of the proteids of food, our knowledge is much restricted. Doubtless the intramolecular addition of inspired oxygen has much to do with it, for living substance deprived of its oxygen loses its . . . tendency to decomposition. . . . The decomposition of living substance is always associated with the formation of carbonic acid. . . . If we accept these views . . . assimilation is the reformation of biogen molecules by those already existing, aided by food stuffs; dissimilation, the decomposition of biogen molecules . . ." (Verworn, Ency. Brit., University Press, Cambridge, Eng. 1911, Vol. XXI, p. 557).

The expenditure of energy in functioning and the removal of excretory products in cell life are largely dependent on the composition of the protoplasm. The biogens must be continually built up from food substances to function normally. In the nutritive processes, however, the building up of the cells, the assimilation, the absorption of the digested products from the alimentary canal, and the chemical changes that take place in the digestive system are evidently nicely correlated. A clue from one of the processes seems likely, therefore, to furnish information about the others. Assimilation and digestion are far too complex to understand; but as the nutritive apparatus of most animals is composed of a tube that runs through the body, the motor activity of the digestive system, as shown by the indices of normal absorption, evidently supplies a clue for understanding, in a measure, the complexity of normal nutrition. Of the digested products entering the body, the protein are the most important, but they are very stabile, and in order to enter a chemical union with the protoplasm of the cells must become labile. The reduction of these nutrient substances appears to be brought about by the action of an enzyme in the blood. The action of insulin on the carbohydrate molecules evidently illustrates an enzymatic reduction for this kind of nutrient substance; therefore, it seems not altogether improbable that the protein and other nutrient substances become labile through the reducing power of enzymes from glands of internal secretion.

A contrast in the failure of assimilation and the normal building up of a tissue is very plainly illustrated in the lower jaw of a guinea pig, shown in Figure 1. In the anterior portion of

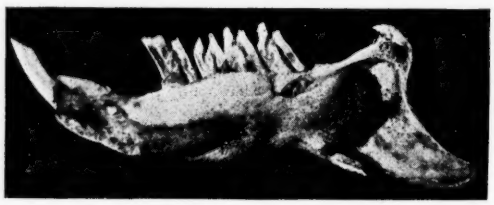


FIGURE 1. The jaw bone of a guinea pig. The weak decalcified bone of the anterior portion developed by malabsorption from a scorbutic diet, but the strong normal bone seen growing over the other is the result of normal absorption with a complete food. (The picture is used through the kindness of Dr. Percy R. Howe of Boston.)

this jaw, a weak decalcified material is depicted which has been partly grown over posteriorally by new, strong, and normal bone. This specimen is similar to several which were removed from a group of young animals given experimental diets. The effect of food without vitamin C was first seen in the action of the digestive system by the dejection of soft and irregular fecal masses. Later, diarrhoea was produced, and evidently as a result of malabsorption, the weak decalcified bone developed. But while the animals were still growing and before the deficiency became extreme, a complete food was given. Here again, the earliest sign of recovery was in the action of the nutritive apparatus; for the diarrhoea was soon

*For record and address of author see "This Week's Issue," page 204.

checked and the absorption of the animals became normal by the dejection of well formed and equal fecal units. During this kind of nutrition the new, strong, and normal bone evidently developed which has grown over some of the decalcified material. (The specimen was obtained from an experimental animal of Dr. Percy R. Howe of Boston, through whose kindness the illustration and information are given.)

In studies on the nutrition of experimental animals, as well as the treatment of human deficiency diseases, the indices of absorption, as early and slight signs of disordered nutrition, have not yet received the attention they deserve. In a review of the literature on malabsorption in deficiency diseases, Burnett and Howe (*J. A. M. A.*, 88 :1705, May 28, 1927) have shown that investigators generally make up a diet and then observe its remote and marked effect on some tissue. The early and slight disorders of intestinal indigestion and malabsorption, as shown by the form of the feces and the intestinal rate, have not been generally recognized. Mellenby (*Brit. M. J.*, 1 :515, Mar. 20, 1926) is an exception to this statement, for he writes, "another condition which commonly develops in puppies, when fed on diets containing an excess of cereal and a deficiency of fat-soluble vitamin, is diarrhoea. . . . Diarrhoea may appear soon after the diet begins and before there is obvious bone deformity." When the indices of normal absorption are generally recognized and applied, nutrition becomes a very delicately balanced, yet exact, process, which should be applied in the control of health.

In the practice of this kind of nutrition, patients are educated to understand the food factors and habits of living that influence their absorption and how generally to correct them. With adjustments of diet and other measures, the indices of normal absorption are regulated and maintained by a daily check on the form of the feces, a monthly check on the intestinal rate and the weight, and a yearly check on the bodily condition in a thorough health examination. Under these circumstances, the physician acting as a health adviser makes out a health program for a person and then has him keep a record of nutrition every once in a while during the year to be sure that the indices of nutrition are generally normal and health is maintained. Such a check of health is necessary, in the first place, because the factors that influence the equilibrium of the nutritive processes are numerous and the person may not be aware of them; and secondly, because there are many who become grossly negligent in looking after themselves and require supervision, in order to carry out a reasonably liberal health program. In considering health and disease from this point of view, a cure of some of the metabolic disorders does not seem to be so much a matter of knowing more about disease, as it is of understanding, regulating, and maintaining a state of health, about which relatively little is yet known. These principles of nutrition have been applied to the cure of some of the dermatoses and an article describing the control of health after eczema and psoriasis is to appear shortly in this journal.

HUNGER, INTESTINAL MOTILITY, CONSTIPATION, AND DIGESTIVE DISORDERS

In considering the alimentary canal as a highly perfected nutritive mechanism which is purposely designed to supply the tissues of every animal with the essential digested products to keep them built up and healthy, variations in nutrition are largely dependent on the way of eating and the kind of food ingested; and the extent of gastric and intestinal motility evidently has an intimate relationship to the absorption of the digested products. The contractions of the stomach from hunger in healthy men have been studied by Rogers and Martin (*Am. J. Physiol.* 82: 113, Sept., 1927). They found two types of gastric action, one a hyperperistalsis, the other a tonic contraction of the antral end of the stomach. The sensations of hunger have been observed by Hoelzel and Klietman (*Ar. Int. Med.* 39 :710, May, 1927), in a single human subject. The nervous reaction was found to give a striking increase in the respiratory rate which was independent of periodic gastric contractions and was induced chiefly by the action of the gastric contents in a hypersensitive duodenum. They also found some evidence to show that fasting, protein starvation, or under-nutrition may give rise to a hypersensitive state in the digestive tract. The motility in some portions of the intestine has been observed by Alvarez and Zimmermann (*Am. J. Physiol.* 83 :52, Dec. 1927) in rabbits with the cinema camera to disprove the "law of the intestine". By successive exposures of a peristaltic rush, the region ahead of the wave is distended; and fecal masses pass down the colon in spite of a powerful contraction above and below the distended region. Magee and Reid (*Jour. Physiol.* 63 :97, July 7, 1927) have tested the action of some of the simpler chemical substances on one of the intestinal functions—rhythmic segmentation. Isolated pieces of rabbit's jejunum were put into Tyrode's solution modified, at first by the absence of a salt, and later by its gradual addition until an excess had been reached. The intestinal contractions with sodium were dependent on its concentration, while calcium increased the tone. Potassium in a weak solution produced an atonic condition, a moderate solution produced contractions of increased power, and with a strong solution, the time was increased but the strength and rate of contractions were diminished. Calcium almost completely antagonized potassium. In an investigation made on intestinal motility in beri-beri and scurvy by Plummer (*Am. J. Physiol.* 80 :278, Apr. 1927), the results obtained generally confirm the increasing evidence

that the alimentary tract in animals with deficiency diseases is generally atrophied and atonic. Segments of intestine removed from the duodenum, ileum, and colon, of rats with beriberi and put into oxygenated Locke's solution, increased the amplitude and duration of rhythmic contractions. Similar specimens of guinea pigs with scurvy showed a lessened duration of activity, and a diminution in the number of rhythmic contractions, with the exception of the ileal strip. The colonic strip showed an amplitude in the contraction and there was also a slight hyperactivity of the duodenal strip.

From understanding that a marked meal in passing through the digestive system within the limits of normal absorption takes a slow course, yet one and two dejections are common daily, constipation is becoming more and more of a "bugaboo". In a comprehensive article on the diagnosis and treatment of chronic constipation, Soper (*Cincinnati J. Med.*, March, 1926) writes, "restoration of function may be secured in practically all normal colons by the dietetic and hygienic method". The best stimulants are feces in the rectosigmoid region, dilatation of anus, food in stomach, defecation, and daily exercise of the abdominal muscles. Somewhat similar observations have been made by Sanders (*New Orleans M. & S. J.* 79 :513, Jan. 1927). The author has compounded a simple fruit mixture, composed of prunes, figs, dates, agar-agar and senna which are cooked, cut into inch squares, and taken at bedtime. But hygiene, diet, and exercise will cure constipation in most patients. The course of nutritive material, supplemented by yeast, through the alimentary canal has been the subject of a study by Thorup and Carlson (*Am. J. Physiol.* 84 :90, Feb. 1928) in rats and men to disprove the theory that yeast is a valuable laxative. In rats, yeast up to 25% had no effect on the intestinal rate. In men, as some show an increased number of dejections, while others may show an increased retention, the value of yeast as a laxative is questionable. A similar investigation of the laxative action of wheat bran has been made by Williams (*Am. J. Physiol.* 83 :1, Dec. 1927). He gave adult dogs from 0.5% to 10% crushed bran and also some paper pulp cellulose. With more than 2%, the laxative effect of the bran was apparent and when 10% was ingested, two grams of additional water were excreted for every gram of bran. Cellulose had a laxative effect but it was not as effective as the bran. The effect of cathartics and thyroid extracts on vitamin A deficiency has been observed by Sano (*J. Pediat.* (Tokyo) 800, June, 1927). A diet devoid of vitamin A was fed young rats and the developmental period of Xerophthalmia noted. By the addition of thyroid extract or cathartics, the period producing sore eyes was not only materially shortened, but sometimes death occurred before the ocular lesions were apparent.

The treatment of ulcers of the stomach and duodenum in man has received a great deal of study, yet, at the present time it is not entirely satisfactory. This is no doubt because the cause of the lesions has not been determined. A point of view brought out by Pappenheimer and Larimore (*J. Ex. Med.* 40 :719, Dec. 1924) from animal experimentation strongly suggest that these lesions are of a deficiency origin. In the experiments rats were fed an alkaline, an acid, and a diet to which cod liver oil was added. Gastric ulcers were found in a high percentage of the animals on the first two foods, but with cod liver oil, only a few lesions were observed. Bits of ingested hair occurred in some of the ulcers.

A normally nourished and healthy adult body should not be much above or below a certain weight; therefore, underweight and overweight are signs of a nutritive disorder that, not only need treatment, but also require subsequent control. An investigation by Bauman (*J. A. M. A.* 90 :22, Jan. 7, 1928) on obesity makes these remarks especially pertinent. With a group of 183 patients which were mostly women, an average of 15 pounds was lost over a period of about ten months. The treatment consisted in reducing the food to 70 gms. of protein, 60 gms. fat, and 100 gms. of carbohydrate, recommending exercise, and prescribing thyroxin to selected patients. Another sign of improved health in these patients was a reduction in blood pressure. Obesity as a cause of sterility forms part of a study by Dickinson and Cary (*J. A. M. A.* 88 :1, Jan. 1, 1927). In an analysis of 230 sterile marriages, 27% were found substantially overweight. Many of these fat men and women had poor semen, amenorrhoea, and defective genital development.

An unusual sensitiveness of the colon has been reported by Eyermann (*Missouri State M. A. J.* 24 :129, April, 1927). The patient had symptoms that resembled gall-bladder disease which were intensified after the consumption of whole wheat bread. A roentgen ray examination revealed a spastic colon which the author believes due to intestinal allergy. An interesting clinical study by Hollander (*Am. J. Med. Sci.* 174 :495, Oct. 1927) has been made on mucous colitis and food sensitiveness. He made dermal tests with various foods on five patients and those that gave positive reactions were omitted and the condition of the colon improved. Some of these foods were eggs, salmon, oysters, goose, chicken, potato, tomatoes, oranges, lemons, and rhubarb. Then, when they were ingested again, the colitis recurred. Punin (*Russkaya Klin.* 7 :886, June, 1927)) believes that the dietetic treatment is most important in colitis with gastric achylia. Milk is not well digested and should be excluded. Olive oil given frequently, in small amounts, and butter are valuable. All food must be thoroughly cooked and divided finely. Chopped meat, vegetable soups, eggs, cereals, and toast comprise the diet.

PREGNANCY, LACTATION, AND NOURISHMENT OF CHILDREN

The maintenance of a moderate state of physical fitness in women during pregnancy through improved nutrition is becoming a recognized and valuable form of treatment. Such a dietary control of women has been observed by Slemons and Fagan (*Am. J. Obs. & Gyn.* 14 :159, Aug. 1927). The diet is made up of about 2,000 calories. The control is believed to lessen the birth injuries of mother and infant, to reduce maternal toxemias, and to restore the mother to her normal weight after delivery. And while the size of the fetus cannot be determined by the diet, it does prevent it from becoming excessively fat. A comprehensive study of variations in human milk has been made by Wardlaw and Dart (*Australian J. Exper. Biol. & M. Sc.* 3 :129, Sept. 1926). They analyzed "the milk secreted by normal women of Australian birth and European stock after lactation had reached a steady state". With 120 samples of milk from the first to ninth month, the following averages were obtained: freezing point 0.0583°C; specific gravity 1.0296; ash 0.19%; then the protein was 1.40%; fat 5.30%; and lactose 6.45%. As lactation continues, the protein, ash, and freezing point decrease, but lactose increases. The fat is higher in the young, as compared with the old. The volume of milk increases with the number of pregnancies up to the fourth.

Experimental evidence from rats of the effect of abundant cereal ingestion has been made by Cowgill et al (*J. A. M. A.* 89 :1770, Nov. 19, 1927). In one article, the investigators discovered that a food of 83.5% whole grain cereal, 5.5% meat residue, 5.5% liver, 4% salt mixture (Osborne-Mendel), 2% cod liver oil, 15 gms. of lettuce and milk, given pregnant females produced a remarkable growth of the young. Experiments were also made on the growth of young animals in which the food was largely composed of oats, wheat, corn, or dextrose. The hominy was found slightly inferior to the other carbohydrates. Dextrose in large amounts did not promote such a vigorous growth as the oats, wheat, and corn. The health of these animals was determined, not only by a comparison of their growth, but also by their skeletal development, dentition, blood, and reproduction. In another article (*Ibid.* 89 :1930, Dec. 3, 1927) which described supplementing eggs for milk, the authors found that corn meal did not promote growth as oats and wheat, and the protein content did not meet the needs of lactation. In the summary the statement is made that "caution must be exercised in applying the results obtained from rat experiments to the nutrition of man".

A study of the effects of lowering vitamin A and calcium in the diets of nursing rats has been made by Grant (*Am. J. Hyg.* 6 :211 & 228, Mar. 1926). The investigator found that rickets does not develop in the young of well nourished mothers when the absence of this vitamin is the only deficiency; but when the mother's reserve of this food has been depleted, nutritional dystrophies occur in her offspring. On the other hand, when vitamin A and calcium are lowered in the food of nursing mothers there is a retarded growth of the young, a change in the type of rickets, especially as the disease attacks the spine. The largest and most resistant young animals of rachitic mothers develop rickets earlier and more severely than the smallest animals of normal mothers. A very acute, as compared with a slow progressive type of rickets, develops in the young if the mother's diet is entirely deficient in vitamin A and calcium. The effect of a diet low in calcium on fertility, pregnancy, and lactation, has been studied in the rat by Macomber (*J. A. M. A.* 88 :6, Jan. 1, 1927). Such a diet does not produce sterility, but increases intrauterine mortality. Those born alive seem normal; during lactation, however, the need of calcium is extreme, the mother rapidly loses her calcium to supply her young, but even so there is a deficiency, and the young animals become stunted, weak, and often die. An increase in the proportion of meat in the diet of female rats improved reproduction and lactation, according to MacLoed (*Am. J. Physiol.* 79 :316, Jan. 1927).

Moore et al (*Am. J. Physiol.* 82 :350, Oct., 1927) have tried the effect of an inadequate amount of vitamin B in the diet of pregnant and nursing rats. This diet is sufficient for the normal growth and reproduction of young females; but evidently reduces the size of the litter and only 28% live beyond the weaning period. The sickly animals develop profuse watery diarrhoea, a sub-normal temperature, and paralysis; and on postmortem examination, show subcutaneous, visceral, and intracranial hemorrhages, and degeneration of many of the moter nerves. Paralytic young animals consuming the maternal diet recovered completely. Moore and Brodie (*Am. J. Dis. Child.* 34 :53, July, 1927) also describe the relation of maternal diet to hemorrhage in an infant. During pregnancy, the woman was obliged to consume a very deficient diet, the child was born prematurely, developed rapid pulse, cold extremities, haematuria, jaundice, and diarrhoea, and lived but a few days. At autopsy, the heart was found dilated, there were hemorrhages into an adrenal and kidney, hyperemia of the stomach and duodenum, and degeneration of the myelin of some of the nerves. The authors believe that the infant had beri-beri as a result of a deficiency of vitamin B in the mother's diet during pregnancy.

A study in the prevention of anorexia in children has been made by Aldrich (*J. A. M. A.* 89 :928, Sept. 17, 1927) who believes that children should not be forced to eat as it produces an aversion to food. At this time, the amount should be reduced in order to accustom children

gradually to changes in food. The children of mothers given these instructions acquired a healthy appetite for the most part and were generally overweight. The importance of the protein requirements of children has been investigated by Bartlett (*J. Am. Diet. Assoc.* 2 :147, Dec., 1926). The author believes that the amount of protein may be as low as 0.6 to 1 gm. to each kilogram of body weight, if sufficient calories of other foods are ingested. Such diets have been tried in the treatment of diabetes, nephritis, idiopathic epilepsy, and obesity.

The underfeeding of children has been described by several physicians. Among them, Patterson (*Arch. Dis. Child.* 2 :395, Oct. 1927), in an investigation of 50 breast and 50 artificially fed underweight infants, found the majority to be merely underfed. A supplementary food given the breast group brought about almost immediate gain in weight. The same result occurred in those fed artificially if more food, especially carbohydrate, were given. Of those not underfed, one infant was overfed on the breast, a few had pyloric stenosis, one had clinical rickets, one fat indigestion, and one was much overfed artificially. With children, Sauer (*J. A. M. A.* 89 :931, Sept. 17, 1927) takes somewhat the same point of view. He advocates supplementary mid-morning, afternoon, and evening meals. The average gain of a group of 30 children was 11 pounds in three months.

A warning on the overfeeding of children with milk has been issued by Hill (*M. Clin. N. Amer.* 10 :1339, Mar., 1927). Food of this kind contains sufficient calories, but on account of its high protein and fat content, there is a failure of absorption as shown by the large amount of calcium soap in the feces. An interesting study on the influence of diet on the reaction of the urine and feces of infants has been made by Tama (*J. Pediat. Tokyo,* 323 :480, Apr. 1927). The feces of breast fed infants has a higher Ph value than the urine; but in artificially fed infants, the reverse is true. When the protein and sugar approach that of mother's milk or when calcium caseinate or much carbohydrate are fed infants, the feces become more alkaline. Malt soup and "galactosan" reduce the acidity of the urine only. The small amount of salts in human milk is evidently responsible for the acid condition of feces.

RICKETS, SCURVY, BERI-BERI, AND PELLAGRA

A plea for sanity in the use of modern methods for the prevention and treatment of rickets by Morse (*Boston M. & S. J.* 197 :388, Sept. 8, 1927) is illuminating, compared with the elaborate treatment advised by some physicians. The author feels that too much has been made of the disease and the laity needlessly frightened about its consequences; and too much cod liver oil and too much irradiation of the young are detrimental to health. This protean disease of malnutrition is undoubtedly responsible for many defects of the skeleton, but Moore (*J. Bone & Joint Surg.* 10 :96, Jan. 1928) has pointed out a relationship to static flat-foot. The chemistry of rickets in children has been described by Gamble (*Boston M. & S. J.* 197 :373, Sept. 8, 1927). The common deficiency found in this disease is in the blood phosphorus which is often less than two mgs. to 100 c.c. or less than half. Estimated in the same way, the calcium is often ten mgs, or a little below normal. On the other hand, with tetany, the blood calcium is about half normal and the phosphorus is little changed. In young rats the disease is produced by a high calcium but low phosphorus diet without vitamin D.

An attempt to prevent rickets in infants has been made by Weech (*Bull. Johns Hopkins Hosp.* 40 :224, Apr. 1927) by giving cod liver oil to nursing women. Some of the vitamin passes into the mother's milk, raises the calcium and phosphorus in the infant's blood, and lessens the roentgenographic evidence of the disease; but the improvement is so slight that the method of treatment was not considered valuable. This result is in accord with the experimental evidence of McCollum et al (*Am. J. Dis. Child.* 33 :230, Feb. 1927) who found that when female rats are given cod liver oil before mating, during pregnancy, and for the first two weeks of nursing, their young are protected to a certain degree, when put on a rickets producing diet. An extensive review and description of experimental rickets has been made by Fraudenthal (*Levin & Munksgaard, Copenhagen,* 1928). The author discusses the diagnosis in a comprehensive way and from his own investigations, shows that some of the methods used to determine this disease are not accurate. The histologic examination and the amount of calcium and phosphorus in the blood cannot always be depended on; it is necessary as well to make a chemical analysis of the bones. Osteoporotic, retarded growth, rachitic changes, and finally normal growing bones are the conditions to be determined; and apparently develop in animals as a result of none, or a sub-minimal supply, of vitamin A. A study of rickets in rats produced without D and high calcium but low phosphorus diets has been made by Karelitz and Shohl (*J. Bio. Chem.* 73 :655, June, 1927). On this basis of nutrition the calcium and phosphorus balances were both positive, the calcium being 50% and phosphorus 20% of the normal. In a similar investigation by these authors in the same journal, the effect of phosphate added to the diet of rachitic rats was studied. The supplementary salt brought about a rapid healing of the lesions, as shown by blood serum analysis, histologic examination of bones, composition of the bones, and the metabolism of calcium and phosphorus. The influence of fat in the diets of rachitic infants on the absorption and excretion of calcium and phosphorus has been made by Telfer (*Quart. J. Med.* 20 :7, Oct. 1926). During the

active stages of the disease, the absorption is poor and the amount of calcium, magnesium, and phosphorus in the feces is high. Cod liver oil has a specific effect in changing conditions in the alimentary tract so that absorption of the mineral elements is increased.

Experiments have been carried on by Grant et al (*Am. Rev. Tuberculosis*, 16 :628 and 642, Nov., 1927) to determine the effect of deficiencies in calcium and vitamin D, and vitamin D alone, in lowering the resistance of rats to tuberculosis. On the former rickets producing diet, young animals were injected with 0.5 mgs. of bovine tubercle bacilli. Most of the animals died of malnutrition in 75 to 213 days, and on examination tuberculosis of the lungs was generally determined by smears and tissue examinations. When only 0.2 mgs. of the bacilli were injected, tuberculosis occurred in only a few animals. Tuberculosis developing in rats on a diet without vitamin D alone is of a chronic type; smears from the lungs are often negative, but discrete tubercles may be seen in sections of the local lesions or lymph glands.

Ordinarily, teeth are thought of as unchangeable tissue, but incomplete and faulty nutrition is becoming more a factor in their normal development and soundness. From 1,036 ground sections of deciduous teeth examined microscopically, Mellanby (*British Dental Journal*, July 1 and Dec. 15, 1927) has found only 15% are perfectly calcified, 21% are slightly, and 64% are definitely hypoplastic. The molar teeth showed defective structure most frequently and the incisors the least. In another article showing the relation of structure to caries, 73% of the first two groups were sound, whereas 85% of the badly calcified teeth were carious. Further evidence from the structure suggests that changes in the resistance occur after eruption.

In writing on the history of scurvy in Holland, Van Andel (*Nederlandsch Tijdscher v. Geneesk*, 71 :610, Aug. 6, 1927) records the lists of foods made up by De Wind in 1760, for ships' crews. The list includes 32 gal. of lemon juice to 100 men and one lb. of tamarinds per man a month; also fresh onions, cabbages, and turnips for "Sunday soup". "Experience teaches that no medicine is able to destroy scurvy at sea without fruits and vegetables." Muelengracht (*Ugeskr. f. Larger* 89 :165, Mar. 3, 1927) reports scurvy in eight unmarried laborers who generally consumed a diet of bread, butter, cheese, coffee, beer, and brandy. They had gingivitis, painful teeth, hemorrhages on the extremities and anemia. By a normal diet, supplemented by fresh vegetables and fruits, the disease was soon cured. The chemical composition of the bones in experimental scurvy has been studied by Bronner (*Biochem. Ztschr.* 190 :402, Nov. 23, 1927) and the Ca-P ratio found normal, but only 10% of these salts were formed in the tissues.

Okada et al (*Arch. Int. Med.* 40 :292, Sept., 1927) assert from observations of a few patients with beri-beri and volunteers in whom the disease was produced, that vitamin B deprivation intensified or brought about the symptoms and also decreased the metabolic rate. A microscopic examination of the tissues of pigeons with beriberi has been made by Messeole (*Virchows Arch. f. path. Anat. U. Physiol.* 262 :305, Nov. 12, 1926). Hypertrophy of the adrenals, fatty degeneration of the skeletal and heart muscles, fragmentation of the myelin, and atrophy and vascular degeneration of the nerve cells in the anterior horn, are some of the lesions observed.

A comprehensive review of pellagra in infancy and childhood in the United States has been compiled by Bloom (*South. M. J.* 21 :124, Feb. 1928). The article gives a historical resumé, enumerates theories of its cause, records the morbidity and mortality statistics for the States, and at the end describes the symptomatology and pathology. "The symptoms of the gastro-intestinal tract are the most constant. Even before the diarrhoea is noted, the child suffers from flatulence. . . . The distension is a common manifestation, and, though the child may defecate twenty times or more daily, the symptom still persists." In a general article on the nature and prevention of pellagra, Goldberger (*Pub. Health Rep.* 42 :2193, Sept. 2, 1927) writes that the skin eruption is "the main reliance in the recognition of the disease", but listlessness, loss of weight, anorexia, constipation, or diarrhoea and, in a few patients, insanity are some of the other symptoms that aid in the diagnosis. . . . For the prevention and cure of pellagra, the only medicine we have is food." Some of the kinds essential are milk, eggs, meat, yeast, and vegetables. It must also be borne in mind that some individuals must be reëducated to proper food habits and unsatisfactory results from treatment are frequently due to a failure to observe this precaution. The disease will recur, if the patient's diet becomes faulty. "To avoid having a return of the disease there is one and only one known way and that is by a proper diet at all times and at all seasons." The preventive effect of tomatoes, carrots, and rutabaga for pellagra has been observed in patients by Goldberger and Wheeler (*Pub. Health Rep.* 42 :1299, May 13, 1927). The juice of canned tomatoes amounting to 1,200 c.c. daily had a feeble action as a preventive, but a pound of cooked carrots or rutabagas was without an effect. In continuing their studies of pellagra-preventive foods, these investigators (*Pub. Health Rep.* 42 :2383, Sept. 30, 1927) gave inmates of the Georgia sanitarium 150 gms, of cow peas or wheat germ as a daily supplementary food in a pellagra-producing diet and observed the former to act feebly, but the latter somewhat better.

ANEMIA, NEPHRITIS, GANGRENE, AND TUMOR FORMATION

The influence of a diet rich in liver on blood regeneration in pernicious anemia has become an outstanding feature of work on nutrition within the last few years. Minot and Murphy (*J. A. M. A.* 89 :759, Sept. 8, 1927) have continued their studies and have added a few points to the treatment. The diet has proved to be beneficial to 105 patients, of whom 99 have acquired over four million corpuscles to the cubic millimeter. Failure to ingest sufficient liver, infections, or multiple transfusions are some of the causes that prevent good results. On the other hand, those that improve have a better appetite, become free from gastro-intestinal disorders, and the neural symptoms are less aggravating. An achlorhydria has persisted in 18 patients. A non protein fraction of liver has been prepared which produces a marked, prompt, and temporary increase in the reticulocytes, a rapid rise in the corpuscles, and appears to be as beneficial as liver and is more easily consumed. Koessler and Maurer (*J. A. M. A.* 89 :768, Sept. 3, 1927) have made a study in the nutrition of 42 patients with pernicious anemia and recommend a high vitamin and caloric diet, in which liver, kidneys, and other glandular organs make up most of the food. In contrast with the Minot-Murphy diet, a great deal more fat is given in order to increase the vitamin content of the food. A certain specificity of the liver diet in pernicious anemia is suggested by Brill's (*J. A. M. A.* 89 :1215, Oct. 8, 1927) observations. He found ten patients with this disease gave a prompt response, whereas in four patients with secondary anemia, the treatment was not beneficial.

The new blood produced by improved nutrition through liver diet in pernicious anemia has been studied by Murphy, Monroe, and Fitz (*J. A. M. A.* 88 :1211, Apr. 16, 1927). The first change in the blood is the delivery of new young corpuscles into the circulation as shown by the number of reticulocytes. At this time, too, there is an increase in the red cell count, hemoglobin concentration, blood volume, and the icturus index is lower. Later the color index becomes less than one, the cell volume lower, and the volume index approaches normal. Notwithstanding the large amount of protein consumed, changes did not occur in the non protein of the plasma, but the protein of the corpuscles increases in proportion to the hemoglobin concentration.

Cornell (*Medicine* 6 :375, Sept. 1927), after making a comprehensive review of the theories relating to the etiology of pernicious anemia, comes to the conclusion, on account of "the widespread involvement of tissue and the mass of biochemical changes, that this fundamental process is a disorder of metabolism". In an analysis of the diets of 26 patients developing pernicious anemia, Cornell (*Bull. Johns Hopkins Hosp.* 40 :409, June, 1927) finds that 18 appeared to consume insufficient food, many insufficient vitamin C and mineral salts; but white bread was taken in excessive amounts and the proportion of fat was usually very high. While the analysis is unusually searching, the abuse of cathartics, oils, or enemata, and the rapidity of eating were not taken into account. "Diarrhoea", varying from two to twelve months, was experienced by some and some form of "indigestion" with various symptoms for two to ten years were found to be pre-disease disorders in many of the patients.

From the experimental work of Whipple and his associates, the value of liver diet in anemia originated. These investigators continue with their investigations (*Am. J. Physiol.* 79 :260, Jan. 1927) and have observed the blood regeneration in anemic dogs with different kinds of protein food. Feeding 200 to 300 gms. of cooked pig's heart to these animals for two weeks increased the hemoglobin from 20 to 30 gms.; similar amounts of skeletal muscle brought about an increase of 10 to 40 gms.; beef stomach, 10 to 20 gms.; and chicken gizzard, 60 to 100 gms. In a similar study (*Ibid.* 79 :271) the same amounts of pig and beef kidneys produced 60-100 gms. of hemoglobin, chicken liver amounting to 150-400 mgs. produced 60-110 gms. of blood. Fish muscle only produced 5-10 gms. and fish livers proved to be almost inert. A study of the value of dairy products (*Ibid.* 79 :280) in which 50-100 gms. of butter, cheese, and cream were fed a day produced only 10-20 gms. in two weeks; and whole milk was almost valueless. Further observations by these investigators (*Ibid.* 80 :391 and 400) show that cooked brain, bone marrow, and pancreas have a moderate value in the regeneration of corpuscles. And cooked fruits, especially apricots and peaches, when added in liberal amounts to a standard diet are very valuable in increasing the corpuscles. The effect of liver and meat diet on the bone marrow, hemoglobin, and corpuscles of pigeons has been investigated by Muller (*Am. J. Physiol.* 82 :269, Oct. 1927). The birds were made anemic by starvation and were then fed diets of grain, beef, and liver. The grain and meat diets brought about a regeneration of cells and hemoglobin in 21 days, but the liver diet caused a partial regeneration and then occurred a rapid and steady loss in the number of cells and hemoglobin. The bone marrow of the anemic birds was plastic but with improved nutrition from the grain and meat diets, many megaloblasts were seen in the periphery and older cells in the center. The marrow of the liver fed birds showed a similar improvement at the height of regeneration, but later the erythrocytic centers became smaller, the cells more mature, and the megaloblasts disappeared. The action of beef liver and iron salts on blood regeneration in anemic dogs has

been studied by Ricker (*J. Clin. Investig.* 5 :141, Dec. 1927) who concludes that blood regeneration in experimental anemia is limited by the availability of iron. Liver diet in this kind of anemia acts entirely according to its content of iron. Hart et al (*J. Bio. Chem.* 72 :229, Mar. 1927) have shown the the deficiency in milk producing anemia is due to inorganic, rather than organic salts.

Interesting observations have been reported by Thomas (*J. A. M. A.* 88 :1559, May 14, 1927) on the health of a carnivorous race, the Greenland Eskimos. These inhabitants of the North consume red meat, fish, and liver and, contrary to the common belief, eat very little fat. They lead a life of great physical activity also, and yet show no increased tendency to vascular or renal disease. Children are breast fed for four or even six years and have neither rickets nor scurvy, while the children of the Labrador Eskimos consuming a more liberal diet, are unusually subject to these deficiency diseases. Experimental evidence of the effect of high protein diets on rats is shown by abnormally high blood nitrogen, hypertrophied kidneys, but normal urine, according to the investigations of Osborne et al (*J. Biol. Chem.* 71 :317, Jan. 1927). When the protein of the food is replaced by urea, hypertrophy of the kidneys does not occur. Kidney changes have been produced by Nuzum (*Arch. Int. Med.* 40 :364, Sept. 1927) in rabbits fed high protein diets for 24 months, while control animals fed a mixed diet with alfalfa and greens remained normal. The experimental animals also had an acid urine containing albumen and casts, non-protein nitrogen in the blood and the systolic blood pressure were increased. The effect of varying amounts of food protein on renal tissue has been made by Moise and Smith (*J. Exper. Med.* 46 :27, July, 1927) and an understanding of the mooted question has become a great deal clearer. These investigators removed one kidney from full grown rats of various ages and then gave them standard and high protein diets. Middle aged animals, consuming 18% protein, did not show significant kidney changes in 90, 120, or 150 days; but these ingesting 85% protein excreted urine containing albumen and casts and showed glomerular and tubular lesions. Old animals maintained on Sherman's "A" or "B" diets generally showed lesions. Dominguez (*J. Exper. Med.* 46 :443, Sept. 1927) asserts that the fluctuations of blood pressure in rabbits from a liver diet does not surpass the changes in normal animals. Davidoff and Cushing (*Arch. Int. Med.* 39 :751, June, 1927) agree with others that acromegaly represents a state of hyperpituitarism which is due to an overaction of the acidophilic cells of the pons anterior, from a disturbance of carbohydrate metabolism.

The effects of malnutrition appear to be capable of producing all kinds of tissue changes. While making a study for a special purpose, Smith and Bogin (*Am. J. Path.* 3 :67, Jan. 1927) gave rats a diet of high casein, moderate starch, and lard, cod liver oil and the Osborne-Mendel salt mixture, and found that some of the rats' tails showed loss of hair and later became gangrenous. In microscopic sections, the inner reticulated cartilage was absent and the outer tissue replaced in part by fibrous tissue. Some of the vessels showed a thickened wall, while others were collapsed. Muscle cells were hyalinized and had pyknotic nuclei. The influence of malnutrition on the growth of epithelial cells has been observed by various investigators. Proliferation of the epithelium in the stomach, in rats fed without vitamin A, has been described by Fujimaki et al (*Gann* 21 :8, 1927). The investigators found a hyperkeratosis of the squamous and transitional epithelium in five out of fifty animals and believe the cellular growth to be carcinomatous, as one animal had a metastasis in the lung. The effects of variations in the food of mice inoculated with the Flexner-Jobling cancer has been studied by Sugiera and Benedict (*J. Cancer Research,* 10 :293, Oct. 1926). Prolonged post-operative, insufficient feeding had a very definite influence on the recurrence of the tumors, as 73% were cured. This is a striking result compared to a cure of 18% found in the normally fed controls.

GOITER, EPILEPSY, AND SKIN DISEASES

The value of iodized water to the inhabitants of goitrous regions is questioned by Olesen (*Pub. Health Rep.* 42 :1355, May 20, 1927) after a study of the results obtained in Anaconda, Montana, Rochester, N. Y., Derbyshire, England, and replies to questionnaires received from 566 health officers in all parts of this country. The experiment in New York has been carried on inexpensively and scientifically; and from surveys made of the incidence of goiter in children, there has been a marked reduction. In Montana, endemic goiter has been less prevalent, although in this region, the water has been supplemented by iodine tablets given the children. On the other hand, the report from England, in which water, tablets, and a combination of both were tried for ten months, not only did not lessen goiter, but seemed to increase it. In this survey, however, the number of childen examined was small and control groups were not examined. The opinions of health officers as to the value of iodized water were very diversified; 28% favored it, 18% were undecided, 35% gave no opinion, and 17% were opposed to the measure. A somewhat contrary opinion on the prevention of goiter has been given by McCarrison (*Brit. M. J.* 1 :94, Jan. 15, 1927) as a result of the study of the water supply of a school in India. Up to three years ago, the incidence of goiter in the pupils was at one time 80%, in spite of the fact that the water contained 1 :10,000 of iodine. Later when the water supply was taken from another source in which the

iodine content was less, goiter almost disappeared. As the old supply contained many bacteria and the new supply was pure, the author believes that the contaminated water was the cause of the goiter. To prove that goiter is not due to a deficiency of iodine, McCarrison (*Lancet*, 1 :916, Apr. 30, 1927) has produced a new type of thyroid disease in young rats on a diet of 60% white flour, 20% protein, and fats, and adequate salts, including iodine. This type of goiter may be common among people that consume excessive amounts of white flour.

Sound and sensible advice on the relation between dietetic prescriptions and human nature has been given by Woodyatt (*Journal-Lancet*, 47: 27, Jan. 15, 1927). The author writes, "doctors who complain that their patients break their diets are often to blame themselves. They prescribe diets so rigid and bizarre that no natural person can stand them indefinitely." In adjusting the food and mode of living of a patient to improve nutrition and restore health, it must be constantly borne in mind that if recurrences are to be prevented and the disease cured under these circumstances, the adjustments must be reasonable or they will not be followed. This point is particularly pertinent in alluding to the ketogenetic diets elaborated by Wilder, by Peterman, and by Talbot, for the treatment of epilepsy in children. These diets, largely composed of fat and low in carbohydrate and protein, appear unreasonably bizarre and therefore cannot be followed long. A report on the use of the ketogenetic diet in epilepsy has been published by McQuarrie and Keith (*Am. J. Dis. Child.* 34 :1013, Dec. 1927). The study was made on a few children but was thorough, especially in regard to the chemical determinations. The investigators found that this diet produced a high peak of acetone bodies in the urine during the afternoon; that the effectiveness of preventing the attacks was largely due to the degree of ketosis; and then, that the diet must be of sufficient caloric value, contain enough vitamin foods and protein, and, finally, be appetizing and digestible. Spangler (*J. Lab. and Clin. Med.* 13 :41, Oct. 1927) has analyzed the ancestors' history of 100 children with epilepsy and found 88% with allergy. Gastro-intestinal allergy was an important factor in the development of convulsions. More accurate results were obtained from a history of offending foods in the digestive system than by skin tests.

For some time, dietary adjustments have been considered valuable in the treatment of skin diseases. This is because indigestion of one sort or another has been found in patients suffering with the dermatoses. The opinion is strengthened by the observations of Schwartz (*Arch. Derm. & Syph.* 13 :672, May, 1926) from the examination of 900 specimens of feces from patients with eczema, furunculosis, acne, rosacea, urticaria, etc. In this preliminary report, most of the patients suffered from protein putrefaction or carbohydrate fermentation. Kerley (*Canadian M. A. J.* 17 :1173, Oct. 1927) in writing on eczema in infants and young children, remarks that it is a skin reaction to foreign protein and must be discovered and removed to cure the disease. Some proteins are rendered innocuous by prolonged heat and when an infant recovers with local applications, the truth is that the baby has become immunized to the responsible protein. Gibson (*Brit. M. J.* 1 :876, May 14, 1927) points out that the ingestion of liquid petrolatum for constipation may cause eczema ani. In metabolic disorders the factors of safety may become entirely expended in two or more of the tissues. From this point of view, Greenwood (*J. A. M. A.* 89 :774, Sept. 3, 1927) calls attention to the high incidence of skin diseases in diabetes. Pruritus in the women patients is the commonest lesion, but fungus infection of the feet is not at all uncommon and may give rise to serious surgical complications.

DISORDERS OF THE SPECIAL SENSE ORGANS

Since Xerophthalmia occurs frequently in experimented animals on a deficient diet, the possibility of deficient or faulty food as a cause of some of the human ocular disorders is not remote. From this standpoint, Adler (*Arch. Ophth.* 56 :593, Nov., 1927) has made a review of the literature and records the evidence relating to Xerophthalmia, cataracts, and night blindness. In a summary of the first disorder the author writes "a diet deficient in vitamin A results in manifold changes in the body, of which the eye symptoms are only a part of the general pathology. . . . At the present time, a good deal of experimental work with the vitamins indicates that changes in intestinal absorption, i.e., in permeability, are associated with vitamin deficiency and may be responsible for many manifestations of this disease." Cataracts in the eyes of experimentally fed animals have been found by a few investigators, some of whom have examined the lesions histologically and found that they were evidently not of congenital origin. Night blindness is commonly a symptom that precedes Xerophthalmia and often accompanies retinitis, icturus, scurvy, etc. In man the disorder has been cured by the addition of cod liver oil or an increase in fat to the diet. As gastro-intestinal "upsets" are often associated with visual disturbances, Pearcy and Allen (*Am. J. Physiol.* 82 :56, Sept. 1927) have observed reflexes from the gastro-intestinal tract to the eye. By the distention of the human stomach and intestines by balloons, objects became blurred and the individual had difficulty in reading. The reactions of drowsiness, warmth, and perspiration of the skin, and diminished knee jerks are similar to the effects produced by eating a large meal.

A relation between nutrition and infections of the upper respiratory tract in experimental animals has been observed by Daniels (*Trans. Am. Acad. Ophthal. and Otolar.* 1926). This

point of view interested Stucky (*Trans. Am. Laryn. Rhino. and Oto. Soc., Inc.,* 1927) and he has pointed out that disturbances of the nasal accessory sinuses are primarily due to a lowered resistance from eating an excess of rich and starchy food, a deficiency of the mineral elements, and insufficient vitamins. As disturbances of the bony structures from malnutrition are known to affect the general condition, Barlow (*Laryngoscope,* 37 :640, Sept. 1927) has been led to consider whether a deficiency in food may not cause deafness. The investigator by a simple method to determine hearing, micro-chemical examinations of the bony labyrinth, and roentgen ray pictures of the osseous ear, concludes that rickets in rats is not a cause of deafness.

STATURE, PHYSIOLOGICAL CHARACTERS, AND THE GROWTH OF ORGANS

In comparing a group of semi-civilized people with a smiliar group of Americans or Europeans, a very decided difference may be seen in variations of stature. The cause of these variations in civilized people seems likely to be the result of nutritional dystrophies from a greater variety of foods and many ways of eating; because the more primitive people are greatly limited in their food supply and eat in much the same way. According to a report (Joint Health Committee, Health Education, p. 27) "we find no dietary deficiency which does not eventually impair growth; hence in normal healthy animals, growth becomes a delicate index of the quality of the diet. Among human beings not living under such controlled conditions, it is not so easy to tell in a given case of retardation just what the factors in the situation are, since poor heredity, physical defects, hygiene, and latent disease also affect growth; but because these other handicaps exist, it does not follow that diet is exerting no influence nor that because attention to diet does not immediately cause a child to gain in weight, food has little to do with undernutrition in children. Dietary factors operate slowly but they are doing something to a child every day." Variations of stature and physiological characters have been pointed out by Jackson (*Am. J. Anat.* 40 :59, Sept. 1927) from a study of measurements and physiological determinations of 1633 University of Minnesota men. Of this number, 279 were of pure Scandinavian, 113 of pure German descent, while the remainder were of mixed blood. In height the Scandinavians led, and the Germans came next. Those of mixed blood were the shortest. The average weight of the group was 141.44, with the Germans averaging 145.88 and the Scandinavians 142.49 pounds. Aside from these slight racial differences, the evidence in general indicates a single type of body build, varying from the medium to slender or stout. In a consideration of the physiologic characters, such as chest expansion, vital capacity, systolic blood pressure, and cardiovascular rating, the groups were also generally uniform. In a comparison with other university men, those of Minnesota, in weight, height, chest girth, and vital capacity, ranked higher than those of Harvard, Yale, and Princeton, but lower than Stanford men. Men of German descent at Minnesota are taller and heavier than the men in the German universities. The slight build of the university group is apparently due to an abnormal early increase in average stature while growth in body build is decreased, as there is no significant increase in average stature after the sixteenth year. And finally from the statistics examined, there appears to be little correlation between body build and pulmonary or cardiovascular functions.

An experimental attempt to show the effects of dietary deficiencies on the growth of certain body systems and organs in rats has been made by Winters, Smith and Mendel (*Am. J. Physiol.* 80 :576, May, 1927). Groups of 25 rats of very much the same weight and age were fed a normal, low calorie, low protein, gliadin, and low salt diet for 40 days. The animals were weighed each day and slight adjustments made in the diets to keep the body weights reasonably constant. At the end of the period the animals were killed, certain body and skeletal measurements taken, and many of the organs weighed. On all diets there was only a slight increase in body length from three to eight per cent., compared with the growth of normal animals; but the gliadin diet produced the longest animals, and the low salt, the shortest. The weight of the big bones of animals stunted on low calorie, low protein, and gliadin diets was 50-60% more than the same bones of the normal animals of similar body weight; but the leg bones of rats stunted on the low salt diet were 30-40% lower in weight than those stunted by other foods, although the increase in length was the same. The persistent skeletal growth, however, did not take place at the expense of the organs studied as they were not decreased. The most significant increase in the weights of the organs occurred in the kidneys of rats on the low salt diet; it amounted to 55% more than the estimated weight at the beginning of the experiment and 63% of the normal gain. Then there occurred an increase in the liver weight of animals on the low salt and low protein diets, the heart with the low protein, and the tests with the gliadin diets. The effect of the low salt diet on organ weights was similar to that already found in rats with incipient rickets.

"WELL" PATIENTS, PREVENTIVE PRACTICE, AND LONGEVITY

A few years ago an article was published by Cramer (*Lancet,* 1 :633, Mar. 29, 1924) on the vitamins and the borderland between health and disease. The article described the effects of a vitamin-poor, in contrast with a vitamin-rich diet, on the growth and health of rats. On the

former food, small, weak animals of low resistance developed which did not show obvious signs of disease and were able to reproduce; while on the latter, the animals were large, strong, resistant, and very vigorous. The observation serves to illustrate a field in human disorders which, in all probability, is caused also by malnutrition. There are many patients having headaches, vague abdominal aches, feelings of lassitude, loss of vigor, or indefinite nervous manifestations, who apply to physicians for relief. On thorough examination, however, obvious signs of a recognized disease cannot be found, and they are often diagnosed as neurasthenic. The failure on the part of the physician to understand these indefinite disturbances is that, while he attempts with every patient to cure disease and restore health, he does not know —indeed no one knows—a great deal about health; and therefore these vague and unsymptomatic disorders, which evidently arise because the body is not continually receiving the nutrient substances to be built up and healthy, are not often cured.

An attempt has been made by Fitz (*Boston M. & S. J.* 197 :1439, Feb. 2, 1927), in a careful analysis of "well" patients, to understand a little of the borderland between health and disease. He found the most common symptom presented by the "well" patient was "indigestion". Some sought medical advice because they thought they had heart, lung, kidney, or nerve disorders, or were afflicted with diabetes, cancer or goiter. A few had headaches, backaches, or other ill-defined aches and pains. Others had heard of the importance of the periodic health examination and wished to have a check made. From a study of the past histories, tonsillectomy, tooth extraction, metabolism tests, and injections with some of the glands had been applied in treatment without satisfactory results. In the hygiene of the "well" patients, according to the requirements of health generally known, there was little to comment on. All of the patients were working men and women who were employed in offices for eight or more hours a day. They ate breakfast and dinner at home and had lunch at a restaurant; they partook of balanced rations containing meats, fish, eggs, potato, green vegetables, fruits, bread and butter, cream and milk; and ate their meals regularly and slowly. Tea or coffee were indulged in at most of the meals. Alcoholic drinks were taken by a few, but excessive drinking was rare. Tobacco in moderation was smoked by most of the men and cigarette smoking was practiced by a few of the women. Most of the women were constipated and required laxatives occasionally or regularly. The amount of sleep was variable but insomnia was unusual. Regular exercise was rare. Outside interests or hobbies were uncommon. Almost all of the patients worried or had some form of unhappiness with which to contend; and these are really the complaints that require treatment. "Well" patients do not require medicine or any form of radical therapeutics but if they get a sympathetic listener, they can be guided into a reasonable existence. Often the reassurance of a negative examination and a proper mental airing is extraordinarily curative.

The practice of medicine appears to be entering a period in which the care of the human body will be very different from the cure of disease as it has been understood in the past. Up to this time, with the attention of investigators and with every aspect of practice focused on disease, a great deal has been found out about bodily disorders. But when the purpose of treatment is taken into account, a patient applies to a physician to be restored to health. With the knowledge he has of morbid processes, a great deal can be done in palliative treatment but many of the diseases in which the tissues are damaged began many years previously and a cure cannot be effected. From this point of view, if the morbid processes from which young and middle-aged patients die are to be checked, a great deal more must be known about the incipient stages of disease. To go back a step further, however, if the physician's duty is to restore health, he must spend less time in working over the final, remote, or even incipient stages of disease and must get a knowledge of a state of the body, as yet little understood—health.

At present health is a vague and variable condition which is generally thought of as freedom from demonstrable disease, but as more is known about a person's habits of eating, the amount of rest taken, the amount and kind of exercise regularly given the muscles, the air breathed, the time spent in sunshine, and the use made of the mind, a great deal more will be found out about the digested products the body absorbs from the food in normal nutrition, and the application of more exact hygienic requirements in the maintenance and control of a more definite state of health.

In an illuminating address by Draper (*J. A. M. A.* 28 :491, Aug. 13, 1927), the unexplored field of preventive medicine in private practice has been described. The author believes that "a false sense of delicacy and a false interpretation of ethics has stood in the way of developments" in this kind of practice; for "the time is coming when a physician will be severely criticised for failure to offer advice on hygienic matters. . . . The alarming extent to which defects and disease go unrecognized until it is too late to accomplish anything more than palliation is sufficient evidence that some one has failed. It is easy to blame it on the ignorance or carelessness of the individual, but I believe that much of the wastage could fairly be laid at the door of the physician who has neglected abundant opportunities for service and also for legitimate and compensable medical practice." Somewhat

the same point of view has been taken by Dodson (*A. M. A. Bull.* 22 :170, Oct. 1927) in a short article on the physician as health adviser and teacher. He writes in part that "the periodic examination of apparently healthy persons . . . is only the first step, and must be followed by advice to the client as to his health habits and conduct. . . . The advice, moreover, should be so impressed on him and so followed up as to insure his acting on it. . . . The opportunity thus created to be the health advisor to scores of apparently well persons . . . if rightly used, would result in a vast increase in his service and clientele. . . . Do the client and his wife realize how essential is intelligent, cordial coöperation between parents and teachers to secure the best results in the training of children in health habits? These include not only habits of eating, sleeping, work or play and the like, but mental habits and attitudes which have such an important bearing on the future mental status of every child. . . . There is, already, widespread and rapidly growing public interest in such matters. . . . Leadership in this movement belongs to the medical profession by virtue of the special knowledge and training of the physician . . ."

In a comprehensive and well written summary of diet and disease, Deeks (*Am. J. Trop. Med.* 7 :111, Mar., 1927) writes "of all the factors concerned in the maintenance of health and the longevity of man, nutrition is undoubtedly the most important as it concerns all individuals and is essential to daily existence. It has been definitely determined that an inadequate diet, deficient in quantity and quality, may not prove permanently deleterious over a small percentage of the life span of an individual, whereas if this period be prolonged, serious results will follow either by lowering resistance of the defensive agents in their struggle against the invasion of infectious organisms, or by predisposing to the deterioration of the tissues and their functions, thus resulting in organic degeneration, early senility, and premature death. Unfortunately, this progressive degeneration is insidious and frequently the damage is irreparatively done before symptoms are manifested. The importance of adequate nutrition, therefore, in the process of growth, tissue repair, and in the maintenance of health must be stressed if a prolonged and healthy existence is to be realized."

Many of the health workers have seen the light and are carrying on well directed campaigns in health education for lengthening human life. The prospect of increasing the span of life has been described by Fisher (*Am. J. Pub. Health,* 17 :1, Jan. 1927). The author writes "if . . . the life span is a part of that natural life cycle, the utmost we can hope to accomplish is . . . to fill out the natural life span of each individual by protecting him from accidents, disease germs, and so forth. . . . I have assembled many of the unhygienic effects of such products of civilization as housing, clothing, cooking, and softening our food, and industrial conditions. . . . The condition of civilized man's teeth compared with those in prehistoric skulls . . . affords an obvious illustration. Intestinal conditions afford a less well recognized illustration. . . . The individual must be taught to practice individual hygiene; . . . and in order to get the best results, the physician who preaches hygiene must also practice what he preaches. To merely examine a man is not enough; the physician must have something educational to give. . . . The essence of improving health for the so-called well is in improving habits. Habits are slow to change; yet only in this way shall we ever add greatly to the expectation of life at the latter ages."

The duties of the state in regard to nutritional problems and health education forms the subject of an address by Mellanby (*Brit. M. J.* 2 :633, Oct. 8, 1927). The English physician points out that education in nutrition should be coördinated so that there should be a more rapid diffusion of new facts as they came to light, and individual workers can take up more quickly the newer and better point of view as it becomes established. This would greatly reduce the hostility too often encountered, in which one group decries the results of another group of workers. The antagonism to Lister's teaching of antisepsis is a common example of divergent points of view. To facilitate the dissemination of accurate information and conserve the food supply, the creation of a Board of Nutrition to the Ministry of Health is recommended. Such a board acting in an advisory capacity "should (a) control the feeding of Poor Law institutions, prisons, welfare centers, and other organizations, where public money is spent; (b) issue dietetic instructions to the public and, where necessary, give the evidence upon which these instructions are based; (c) and consider the advisability of controlling food supplies and especially of increasing the availability of the "protective" foods to the public.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14231

LIFELONG SEVERE ASTHMA

MEDICAL DEPARTMENT

An American forty-seven years old, a cotton sorter, entered March 20 complaining of shortness of breath.

All his life since the age of one year he had had many rather severe attacks of asthma. During recent months he had been unusually short of breath on exertion between attacks. A week before admission he contracted a mild cold, principally in the head. With it his asthma became very much worse. He told a doctor that he had had asthma all his life and asked for adrenalin, which was given. No examination was made. He continued at work until four days before admission. Then he suddenly had severe pain in the right side, forcing him to stop work at once. The next day he had his side strapped with considerable relief of symptoms, and again was given adrenalin but was not examined. He had remained at home, though not in bed, with cough, marked shortness of breath, anorexia and malaise. The night before admission he became markedly short of breath and had to go to bed and remain propped up in a sitting position. Eight minims of adrenalin gave no relief. He came to the Emergency Ward in a taxicab and walked in.

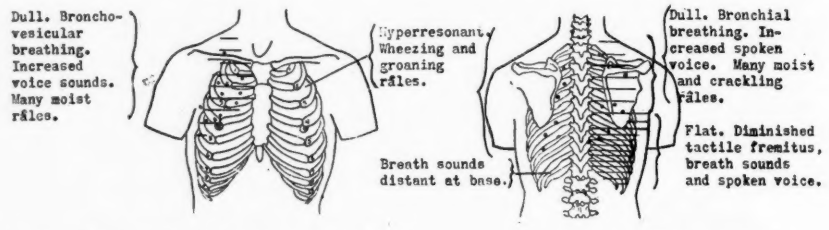
He had been a hard liver and a drinker. He had pneumonia seven years before admission.

Clinical examination showed a small thin man with cyanotic face and hands lying in bed breathing with great effort, the nostrils dilating in inspiration and all the accessory muscles in use. Occasional loose rattling cough. Carious teeth. Pyorrhea. Tongue atrophied on the right and deviated to that side. Throat injected. Tonsils large and red. Chest barrel shaped. Expansion limited. Lung signs as shown in the diagram. Heart not apparently enlarged, rapid, regular, but beats as heard with blood pressure apparatus varied in intensity; two large, then two small generally. Pulses of low tension. Blood pressure 80/45. Artery walls normal. Abdomen distended. Questionable liver edge three or four fingerbreadths below the costal margin. Rectum and genitals not examined. Pupils and reflexes normal.

Amount of urine not recorded, specific gravity 1.020, no albumin, sediment loaded with brown granular casts, 3 to 4 leukocytes per field. Blood: 35,000 leukocytes.

Temperature 103.8° rectal. Pulse 122. Respirations 34.

The patient was given five minims of adrenalin hourly with no appreciable benefit. The orthopnea continued extreme although the cyanosis became less marked with a high head rest and quiet. About two hours after admission the patient said he felt better. Within ten minutes he suddenly died.


Dull. Broncho-vesicular breathing. Increased voice sounds. Many moist râles.
Hyperresonant. Wheezing and groaning râles.
Breath sounds distant at base.
Dull. Bronchial breathing. Increased spoken voice. Many moist and crackling râles.
Flat. Diminished tactile fremitus, breath sounds and spoken voice.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

"Pain the right side." We are not told of what it is the right side. Maybe it is the right side of the chest.

Severe pain is something that asthma cannot produce. Asthma does not give any pain like that.

"Walked into the hospital." That is recorded in view of a condition in which presumably he should not have done it.

NOTES ON THE PHYSICAL EXAMINATION

The tongue makes us look for other evidences of paralysis in the facial muscles and the rest of the body.

The diagram makes us think of a pneumonia in an emphysematous chest such as may have come with chronic asthma.

I have never seen that particular combination of two large pulse beats, then two small. It is nothing that has a name so far as I know.

I have no doubt they made a diagnosis of pneumonia. This history is clearly of that, I should say, with a very chronic process which might be asthma and emphysema.

The fact that adrenalin gave no appreciable benefit shows that his distress was probably not then due to asthma.

DIFFERENTIAL DIAGNOSIS

Here is a man who was weakened by a life-long asthma, which is not in itself bad enough in him to be a cause of death. If he got pleural effusion on top of that he might be unable to resist a disease that is not ordinarily fatal. I have never seen so high a temperature as that with pleurisy unaccompanied by pneumonia. My guess is that he probably has pneumonia with some pleural effusion at the bottom of that right chest. What are we to expect in the post-mortem findings? I expect pneumonia, right upper, I suppose lobar. I expect emphysema of the remaining lungs from his life-long asthma if we take this history as true, as I suppose it is. Most of these cases also show some evidence of chronic bronchitis. If his heart is hypertrophied it should be the right ventricle owing to the extra work which asthma and emphysema bring on it. Although he has many brown granular casts, that may be due to the fact that he has pneumonia. I think we need not suppose nephritis, although disease of the kidneys is perfectly possible. As he was very alcoholic we might make some guesses about his liver, but they would be nothing better than that. There is no evidence of hepatic insufficiency or of portal stasis.

A STUDENT: Is that pulsus alternans?

DR. CABOT: Two large beats and two small is not pulsus alternans. That is one and one.

A STUDENT: Can you have all these granular casts with no albumin?

DR. CABOT: That is what they say, and I think we should believe them, but I do not remember having seen many brown granular casts without albumin.

A STUDENT: Could he be up and walking about with lobar pneumonia?

DR. CABOT: He certainly could. That is one of the tragedies that we face. Many patients walk all the way in to the Out-Patient Department with lobar pneumonia. It is a terrible fact, but true.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Pneumonia of the right upper lobe, probably lobar.
Emphysema of the lungs.
Probably chronic bronchitis.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Bronchopneumonia (Friedländer's bacillus).

2. *Secondary or terminal lesions.*

Pulmonary tuberculosis, active.
Bronchiectasis.
Chronic interstitial pneumonitis.
Arteriosclerosis of the pulmonary arterioles.
Hypertrophy of the right heart.

DR. TRACY B. MALLORY: The chief reason for presenting this case was to bring out just the fact that the last question suggested. He had a pneumonia, bronchial in type, portions of which were at least a week old, so that his cold in the head or acute infection mentioned at the start must have been the onset of the pneumonia. That was close to the hilus of the middle lobe of the right lung. Probably it did not reach to the periphery, so that there was no pleural pain. With the extension of the pneumonic process to the lower lobe and to the surrounding portions of the middle lobe the pleura became involved and accounted for the pain mentioned about four days before death. There is the usual pathologic picture of a red hepatization in these last areas, and a very old gray, almost white hepatization in the original area, which makes the time interval very evident. So far as the rest of his lungs are concerned a number of unusual things were found, not at all suggested in the clinical picture. At his left apex was a large tuberculous cavity between two and three centimeters in diameter with caseous tuberculosis in the surrounding lung involving over half of his left upper lobe; an active tuberculosis of distinct significance. His right upper lobe showed an extreme degree of fibrous interstitial pneumonitis with complete destruction of the alveolar tissue and marked dilatation of the persistent bronchi, very definite bronchiectasis restricted to that upper lobe. All of the middle and lower lobes, as I said, were involved in the pneumonia. These two lobes together were considerably larger than the patient's liver. On section the exudate was quite definitely mucoid. That very marked distention of one or more lobes and the mucoid character of the exudate is very characteristic of Friedländer's bacillus pneumonia. I suspected that at the time, and then decided against it, because ordinarily the mucus is extremely viscid in character. As one cuts the lobe and withdraws the knife strings of mucus three or four millimeters in diameter string out and drip from the knife very much as thick honey drips from a spoon. The mucoid exudate one observes in Type III pneumonia never is so marked as in Friedländer's. We thought that possibly Type III was the organism here. Culture proved however that it was a Friedländer's bacillus pneumonia. These cases are relatively rare. I have seen only four altogether. All of them have shown this marked distention of one or more lobes. In this case it was sufficient to depress the diaphragm two interspaces, so that his liver was nearly a handsbreadth below the costal margin, and the diagnosis of fluid would certainly have been quite justified.

The other organs are essentially negative. The kidneys showed the congestion and the so-called

cloudy swelling associated with pneumonic cases, but no true nephritis.

DR. CABOT: I do not know exactly what to say about his asthma. There is not the least evidence of it. I do not know that it can be excluded. Chronic tuberculosis can be perfectly compatible with asthma, but ordinarily an asthma which goes on as long as this causes emphysema, which did not show in the bottom of the left lung.

DR. MALLORY: I should have said there was marked emphysema; but he had only one lobe left to breathe with, so that compensatory emphysema would have been present in any case, whether it was there before the onset of the pneumonia or not.

CASE 14232

ACUTE INFECTION AT FIFTEEN WITH DEATH IN ELEVEN DAYS

MEDICAL DEPARTMENT

An American schoolgirl of fifteen came to the Emergency Ward April 3. The complaints were disorientation, stupor, speech disturbance, restlessness.

March 23, ten days before admission, she had a sore throat. For the next five days she had slight coryza and sore throat, but did not feel very ill. March 28 she complained of severe frontal headache. After using drops for the nose prescribed by a physician there was a discharge of pus and blood from the nose followed by general improvement until the morning of March 30. Then she had high fever, was restless, somewhat delirious and said she could not bend her neck. That night she had nightmares. The following afternoon she had a chill and was very nervous and irritable. The day before admission she became incontinent and her speech was disturbed.

Her mother was ill with grippe.

The girl was normal until the year before admission. During that school year she was quiet, tired easily and had short periods of anorexia. In the spring she was sent home from school with a letter from the school physician saying that she was thirty pounds underweight. She was then given a heartier diet, gained some weight and became much livelier. Or going to high school in the autumn she again became listless and somewhat undernourished. During the winter she had frequent sore throats. Her catamenia began two months before admission.

Clinical examination showed a thin, pale girl with large dilated pupils, breathing rapidly with the nostrils in motion. Some dehydration. Questionable petechiae on the right arm. Tongue dry and parched. Slight external squint of the right eye. Slight left facial weakness. Neck stiff. Heart not enlarged. Rhythm regular. Sounds not of good quality. Loud diastolic and systolic murmurs heard best just inside and above the apex. A few crackling râles heard at the right apex as low as the fourth interspace, more in front, with some dullness and bronchovesicular breathing. These râles were not heard when listened for another time. At the left apex one râle was heard once. Expansion on the left side was better than on the right. The abdomen showed considerable diffuse rigidity and tenderness. One examiner thought the most tenderness was over McBurney's region. Extremities not examined for tremor. No edema. Reflexes diminished in the arms, normal in the legs. No abdominals elicited. Babinski not obtained. Plantars questionable. Definite tâche cérébrale. Pupils dilated, regular, reacted to accommodation but not to light. Fundi showed considerable blurring around the nasal margins.

A catheter specimen of urine showed a specific gravity of 1.022, a trace of albumin, a slight trace of sugar, a trace of acetone, many leukocytes and cellular casts. Blood: 35,250 leukocytes, 85 per cent. polymorphonuclears, red cells normal, platelets moderately increased.

Temperature 103.8° to 102°, rectal. Pulse 124 to 160. Respirations 42 to 20.

A lumbar puncture the day of admission gave fluid with the "frosted glass" appearance, initial pressure 215. Dynamics showed no evidence of block. Cells, 30 polymorphonuclears, 670 lymphocytes (96 per cent.). In fifteen minutes the cells showed early granular degeneration. Alcohol slightly positive. Ammonium sulphate negative. Chlorides 696 milligrams. Sugar 67 milligrams. Total protein 55. Wassermann negative. Goldsol 0012100000. Culture, no growth. April 4 another lumbar puncture gave 35 cubic centimeters of fluid with the same appearance. The spinal canal was drained. Initial pressure 240 millimeters, dynamics as the day before, 1,020 cells, 84 per cent. lymphocytes, 16 per cent. polymorphonuclears. The cells again showed early granular degeneration. Alcohol positive, ammonium sulphate slightly positive. Smear showed no organisms. Culture showed streptococcus hemolyticus.

April 4 a portable X-ray showed an area of slightly increased density in the left lung field. Otherwise the lung fields were clear. The diaphragm was sharply outlined and moved normally with respiration. The plate was overexposed and the examination was not entirely satisfactory.

The day after admission the patient was sicker, more comatose, did not talk. Fine crepitant râles were heard in the base posteriorly. She was given 1,000 cubic centimeters of glucose subcutaneously. After the lumbar puncture she remained in the same condition until midnight. Then she gave a shrill cry and had a convulsion which started with contraction and shaking of the left arm and quivering and jerking of the mouth, eyelids and neck. The eyes rolled upward and became fixed. This convulsion lasted thirty-five minutes. After it the left arm and leg became paralyzed.

At two o'clock in the morning April 5 examination showed the left fundus normal but the nasal margin of the right disc definitely blurred. There were some râles at both bases. The heart was enlarged somewhat to the left, with loud systolic and presystolic murmurs at the apex, not well localized however. There was a slight systolic murmur in the pulmonic area. There was marked spasm of the recti. The lower abdomen showed tenderness. There was much gurgling in the ascending colon. Fluid was felt in the colon. There was some gaseous distention of the abdomen. The left arm was paralyzed, its reflexes increased, Hoffmann present. The left leg was weak compared to the right, its reflexes increased, ankle clonus unsustained, positive Babinski. The reflexes of the right arm and leg were normal; no Hoffmann or Babinski. The abdominal reflexes were absent. The patient was incontinent.

At 3.20 a. m. she had another convulsion which involved the whole left side of the body and lasted thirty minutes. After it the temperature went up to 104°, the pulse to 150, the respiratory rate to 38. At 4.20 and 5 o'clock she had similar convulsions lasting only fifteen minutes each. That morning she died.

Discussion

by A. V. Bock, M.D.

Notes on the History

The history of the present illness presents a picture of a very rapidly progressive acute infection probably involving the meninges.

The paragraph on the past history is a very important one. With a history of easy fatigue and loss of weight in a girl of fifteen without any outstanding thing to account for it, what would you say was the most probable cause?

Students: Tuberculosis.

Dr. Bock: Yes, unless some other infection is doing it.

A Student: She was thirty pounds under weight. Did she lose weight?

Dr. Bock: I cannot say from this record. But since she gained weight readily when the régime was changed, it seems likely that there had been a real loss of weight.

A Student: Is it customary for catamenia to begin under these conditions?

Dr. Bock: Her general lack of good health would not necessarily prevent initiation of the menstrual cycle. It sometimes does.

If she has tuberculosis this infection might be in the lung, it might be in the spine, it might be in the kidneys, it might be hilus tuberculosis.

Notes on the Physical Examination

"Questionable petechiae on the right arm." Statements of that kind in these records are always questionable. I should have liked to see whether they were petechiae or not. It would help a great deal if that statement were positive.

One would like to know a little more about those murmurs and more about the size of that heart and if there was a mitral stenosis present. The history in the preceding paragraph may have something to do with a rheumatic heart not quite up to the normal reserve that it should have and capable of producing fatigue and the sort of picture she presents without our needing to look for such an infection as tuberculosis.

If those râles were really heard of course they are quite significant if they were at the apex. They are less so if heard at the base in an infection such as she is having.

"One râle heard once" might better be left out of the record. It is like finding one malarial organism, which generally means one platelet on top of one red blood corpuscle.

Absence of abdominal reflexes in an acutely ill person is not uncommon.

The "tâche cérébrale" was considered at one time quite significant of meningitis, especially in children.

Blurring around the nasal margins of the fundi may or may not mean that there was some increase in the intracranial pressure.

As far as we have gone the picture looks as if the findings were in the central nerve system with the possibility of meningitis being the most likely cause. We have not much lead so far as to whether the heart played a rôle or not. There has been possibility of its playing a rôle before the onset of this illness.

Except for the sugar the urine examination shows a not unusual picture of acute infection.

The chart makes one wonder about the nature of the infection a little more.

Variations like this in the respiratory rate in a person with meningitis are to be expected.

The cell count in the first lumbar puncture shows the kind of formula one would expect in tuberculous meningitis. The pressure too in this infection is very often normal. What the granular degeneration of the cells means I do not know. There is a very slight reduction in the chlorides, the lower limit of which is 715 or 720 I think. The sugar is normal at 67, which one finds in meningitis generally only at the very beginning of the infection. The second lumbar puncture showed practically the same findings except that the culture showed streptococcus hemolyticus. Except for the finding of streptococci the report is quite right for tuberculous meningitis. If the condition is due to streptococcus one would expect to find the organisms in the smear and to have a very different cell formula. Nothing is said about the usual pellicle which we find in the spinal fluid of tuberculous meningitis.

I had never heard of the Hoffman sign until yesterday. Do you know what it is?

A Student: When the end of the first, second or fourth finger is nipped the terminal phalanx of the thumb is quickly flexed.

DR. BOCK: It is the same type of reflex as the Babinski referred to a higher level in the pyramidal tract. It has been in use for about a year.

DIFFERENTIAL DIAGNOSIS

Here is another case with a red herring or two dragged across the trail. Without the finding of streptococcus hemolyticus in the culture in the spinal fluid it seems to me the picture is perfectly consistent throughout with a diagnosis of tuberculous meningitis, and in spite of the streptococcus hemolyticus that is what I think has produced and been the immediate cause of death in this case. Other organisms like the pneumococcus, staphylococcus, and any streptococcus producing an acute meningitis such as this girl has had would give so far as I know a purulent fluid with many more polymorphonuclears in the count than this fluid showed, with a lower sugar in the spinal fluid.

The only other thing of interest in this case aside from the finding of the streptococcus hemolyticus is the rôle of the heart. We see cases of meningitis, particularly tuberculous meningitis, in which the exudate is quite excessive and can produce local paralysis, can produce hemiplegia, can produce multiple convulsions such as she had without any doubt. This patient, if the description of the heart is correct, had a rheumatic heart, and the fact that streptococcus hemolyticus seems to be hovering about in this case makes the possibility of malignant endocarditis due to streptococcus possible. That organism is however usually viridans and not streptococcus hemolyticus. But we know that multiple emboli coming from the infected valve in malignant endocarditis can produce such a picture. I do not think however there is any evidence of endocarditis in this case.

The other feature of the case is the possibility of miliary tuberculosis. We know that in infants who die of meningitis due to tuberculosis miliary tuberculosis is generally present. We see young adults dying of miliary tuberculosis with very little evidence of tuberculosis elsewhere in the body. In this case with a history of a year or so of fatigue and general depression and then the fulminating attack, I shall not be surprised if Dr. Mallory tells us that the patient had miliary tuberculosis and tuberculosis of the lungs and abdomen as well as in the spinal fluid. At least my primary bet in this case is tuberculous meningitis, second, miliary tuberculosis. My guess is that the heart played no part in the picture.

A STUDENT: Would not the findings in this spinal fluid go well with acute poliomyelitis? How do you rule that out?

DR. BOCK: That is one of the things that made me think about the time of year. Have you ever seen poliomyelitis at this time of the year?

A STUDENT: I have seen hardly any poliomyelitis.

DR. BOCK: It is a disease occurring in August, September and October, dies down during the winter, and seldom occurs in the spring. The picture could go with a severe poliomyelitis, but I think it is not very likely.

A STUDENT: How about the fact that we have 85 per cent. polymorphonuclears in the blood and that the heart enlarged in two days?

DR. BOCK: I think we can not place much emphasis upon the observation concerning the heart. The difficult question to answer is, why should the white count be so high if the infection is due to the tubercle bacillus?

A STUDENT: You would not expect that finding of 85 per cent. polymorphonuclears.

DR. BOCK: Yes, in the blood. But I can not remember a leukocyte count as high as that. It is against the diagnosis of tuberculosis, and is the only thing that has influenced me very much against it, discounting as I do the finding of the streptococcus hemolyticus.

A STUDENT: Do you think if she had an acute sinusitis she could have developed septicemia and meningitis from it?

DR. BOCK: That is, infection through the nose, presumably through the cribriform plate, is one of the routes for setting up a severe meningitis due to the streptococcus. It is a perfectly possible diagnosis. The only difficulty is the finding in the fluid, which is a bit against that. If this culture had been checked up and the cell findings in the fluid found to have a different formula, then the probability of the case's being anything but a streptococcus hemolyticus meningitis would be very small.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Meningitis, atypical.

DR. A. V. BOCK'S DIAGNOSIS

Tuberculous meningitis.
Possibly miliary tuberculosis.

ANATOMIC DIAGNOSES

1. *Primary diseases.*

Purulent frontal sinusitis.
Purulent meningitis, streptococcus hemolyticus.

2. *Secondary or terminal lesions.*

Central necrosis of the liver.
Toxic necrosis of the Malpighian corpuscles.

Dr. Tracy B. Mallory: This was a case of streptococcus hemolyticus meningitis; but how it was able to give such a cell picture in the spinal fluid I have not the faintest idea. Overwhelming streptococcus infection may result in marked diminution of polymorphonuclears in the blood stream. These organisms probably possess a definite leukocytic toxin like that known to be formed by staphylococci. But the excellent count of polymorphonuclears in the blood stream fails to support this hypothesis. I do not know whether to question the findings in the spinal fluid or not. Microscopically there is a polymorphonuclear response. The only other possibility is that it was sufficiently walled off high up so that what one got in the lower spinal fluid was the irritable response that one sometimes gets in brain abscess cases. But if it had been walled off we should not have had a positive culture from the lumbar fluid.

The process started with frontal sinusitis, bilateral, and also a purulent infection of the sphenoidal antrum. One of the frontal sinuses had actually ulcerated through. A large amount of pus was found between the dura and the skull. This had later extended through the dura and then passed into the subarachnoid space and worked into the base of the brain.

The findings elsewhere in the body were merely those of toxic reaction to a hemolytic streptococcus infection. There was central necrosis of the liver and also toxic necrosis of the Malpighian corpuscles in the spleen, both of which occur in various toxemias and do not mean any localization of the organisms themselves.

A Student: Was the heart normal?

Dr. Mallory: Yes.

A Student: There was no evidence of tuberculosis?

Dr. Mallory: No.

Dr. Bock: There are two or three inaccuracies in the observations on the part of the house officers, especially with reference to the heart. The cardiac findings should have been checked up more carefully. The findings in the heart might have been responsible for a considerable part of the picture here.

The question comes up whether the cells in the spinal fluid were identified properly or not. It seems to me very strange to see an account of this kind with a streptococcus in the background. The cell findings made me feel that the appearance of the streptococcus in the culture was the result of faulty technique, particularly since the organism was not found in the smear.

It is a very instructive case. The student made a good guess as to the portal of entry, the nose.

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HEMOLYTIC STREPTOCOCCUS INFECTIONS

HEMOLYTIC streptococci are responsible for a vast deal of human suffering. Frequently malignant, rarely benign, these cocci cause a series of dreaded infections from follicular tonsillitis and septic sore throat through scarlet fever and erysipelas to cellulitis and fatal septicemia. They have ways all their own; they invade tissues, setting up septic processes that result in active physical damage, and they secrete poisonous substances which not only add to the misery of the afflicted but lower the resistance of the body to further bacterial attack. Even in their milder forms they incapacitate and debilitate the host.

The new and lively interest taken in hemolytic streptococci since the work of the Dicks and of Dochez has already brought abundant and beneficent results in erysipelas and scarlet fever. The recent lamentable death of a Boston surgeon, however, serves as a poignant reminder of our inability to cope with the cellulitis caused by some of these hemolytic strains. Starting from a trifling wound this microörganism often invades the body with a speed that even prompt surgery fails to arrest. Such infections and those of the puerperium find us with no specific means for their cure.

Diseases due to hemolytic streptococci are declining with the exception of puerperal fever. This fact, taken with the tragic fate of pathologists and surgeons following accidental infection has already stimulated pathologists to renewed studies of these deadly organisms. Reports are appearing in various scientific periodicals from Japan, Russia, Europe and the United States telling of new facts that must eventually lead to preventive and curative measures. Some authors claim a far closer relationship between these various cocci than was ever suspected or believed. After studying toxin production and toxin neutralization by intradermic methods, Ando, Kurauchi and Ozaki[1] say that hemolytic streptococci isolated from pathologic foci, scarlatinal and non-scarlatinal, produce a toxic principle which may differ with the various strains, but which can be equally neutralized by scarlatinal, erysipelas and suppurative streptococcus antitoxic serums. Scarlatinal antitoxic serum is more comprehensive in its neutralizing action than the erysipelas serum. Practically similar results are reported by Zlatogoroff and Derkatch[2]. All this new evidence seems to be leading to what has been called the "unitarian" hypothesis that all pathogenic streptococci are identical in their pathogenic and toxic action. It may seem a fanciful idea that the hemolytic coccus causing tonsillitis may under a different set of conditions cause scarlet fever, erysipelas, cellulitis or puerperal sepsis, but the more closely we observe these infections, the more resemblances we see not only in their morbid manifestations but also in many of their bacteriologic and serologic features. There are enough discordant reports at hand to delay for the present the acceptance of this hypothesis. Be that as it may, we seem to be approaching a solution of the perplexing riddle presented by streptococcus infections. These newly found facts stir the philosophic imagination and stimulate the experimenter and the clinician to further efforts in the study of this class of infections. Along with this advance in our purely academic knowledge there have come gifts of great practical and humanitarian value. Specific biologic agents have been found for the prevention of scarlet fever and the treatment of this fever and erysipelas. Furthermore, the facts on which this unitarian hypothesis is based would indicate that the streptococcus antitoxins that we now possess should have curative action for hemolytic streptococcus infections other than scarlet fever and erysipelas.

Both laboratory and clinical experience show that scarlet fever streptococcus antitoxin may be used with success in erysipelas, and such reliable authors as Parish and Okell[3] advise that it be given a more extensive trial in all severe streptococcal infections, particularly in general septicemia.

This antitoxin is now freely available; if given early in scarlet fever and erysipelas its effect is a happy one, and there is good reason to believe that this fortunate action may occur in other cases of streptococcus infections. In the hope that such may prove to be the case and that some deaths from accidental infection or from the septicemia of the puerperium may be averted this editorial is written.

REFERENCES

1 Ando, K., Kurauchi, K., and Ozaki, K.: Studies on the "Toxins" of Hemolytic Streptococci. Jour. Immunol., 15, 3, 191, May, 1928.
2 Zlatogoroff, S. I., and Derkatch, W.: On the Specificity of Scarlet Fever Streptococci. Jour. Inf. Dis., 42, 1, 56, January, 1928.
3 Parish, H. J., and Okell, C. C.: Two Studies of Streptococcal Infections. Lancet, 1, 7, 46, April 14, 1928.

CANCER PHOBIA

ATTENTION has been called to criticisms of the cancer campaign because of the development of the so-called cancer phobia. Some physicians have criticised the general dissemination of information with respect to the prevalence and nature of the disease and the measures employed in its treatment because of the depressing fear which is often felt when suspicion arises in connection with discomfort, obscure pain, superficial lesions, or disturbed functions.

It is even believed by some doctors that the lay person is better off when free from concern about his physical condition. This would be true if the problems of sickness did not demand personal responsibility which adults ought to recognize.

We begin with the education of the child to teach it to avoid apparent and hidden dangers. We permit more and more freedom of action as the child grows and with experience and growing intelligence the youth is allowed to test his ability to protect himself in contact with natures forces. He learns to swim, engage in physical contests and do many other acts which if uncontrolled by intelligence bring disaster. With reference to social contacts he is informed of the dangers of unbridled passion and throughout his life his mind becomes stored with knowledge which fits him for the dangers with which he is beset.

Years ago the same objection to a phobia existed in the problem of tuberculosis and the unfair unscientific and timid resource of the doctor who kept his tuberculosis patient from the shock of knowing that he must submit to the best possible regime necessary for the cure or relief of his infection has been thrown into the discard. Many a hopeless consumptive in those days cursed his doctor for not telling him early of his trouble.

We are faced by a more serious menace to the race today. A disease with a larger mortality percentage than tuberculosis is threatening the people, with its primary cause obscure and its cure restricted to certain early phases. It is increasing numerically or is more generally recognized.

For some unexplained reason the medical profession in Massachusetts was tardy in the inauguration of an intensive campaign until the public sent out the Macedonian cry and the legislature imposed upon the State Department of Health the responsibility of study and care of those afflicted with the disease. This work has been prosecuted with zeal and the best talent in the state has been drafted for the contest.

Now appears the warning protest from some well intentioned persons that publicity has created an unwarranted phobia.

That fear is a necessary human emotion is believed to be true in so far as it may create defensive action. The majority do not carefully study the problems of life nor act according to well thought out plans. Organizations and well trained individuals are at work putting before the people the dangers incident to existence. The hazards of industry have been stressed, the menace of modern transportation has been emphasized, the dangers of fire elaborated, all for the purpose of teaching people how to prevent disaster.

In medicine the people have been told about the suffering, mutilation and mortality of smallpox, the danger of diphtheria, typhoid fever et al. and how to protect themselves and those for whom they are responsible, but with some the horrors of cancer must not be told. This is in our opinion a reversion to weakness which no well educated physician should indulge. So far as any doctor lends himself to this laissez-faire policy he may be responsible for calamities which might have been prevented. Better for the weak to suffer with phobias than that lives should be needlessly sacrificed. If the phobia is without reason it may be dispelled promptly by consulting a doctor. If the disease in an incurable form is found the sufferer should meet the misfortune as bravely as possible, sustained by the resources of medicine.

If phobias can bring into operation saving measures we must accept the mental distress as part of a plan which will bring relief to some. Some have been saved because of the widespread cancer propaganda. More will be saved when all can be brought to appreciate the resources of medicine in dealing with the earliest symptoms.

We believe that the State Department of Public Health is doing its work courageously and as efficiently as is possible under existing conditions.

HEADACHE

EVERYONE admits the frequency of headache as a symptom, the danger of which it is occasionally a signal, and the singular diversity of its causes. It is, moreover, a symptom which is too often lightly dismissed with little real effort made at discovering its source. In this issue Dr. Drury, through an analysis of one thousand

cases which presented themselves at the Evans Memorial, has shown what a careful and painstaking search into the history and physical condition of these patients may reveal.

Headache, in his words, is one of the commonest symptoms of the most diverse complaints, acute and chronic, mild and severe. The patient presenting himself to the physician with the complaint of headache should be submitted to a minute and complete examination. The rôle which errors of refraction, paranasal sinusitis, neuralgia, dental defects and migraine play in the causation of headache are fairly patent; it is too often our fault that we ascribe headache to one of these causes and search no farther. Too often we fail to realize the existence of intracranial disease; rarely do we conduct searches such as those which have been carried out so extensively at the Evans Memorial, and discover the existence of endocrine dysfunction which may explain the distressing symptom which is presenting.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Drury, Dana W. M.D. Harvard, 1904. F.A.C.S. Surgeon of Oto-Laryngology, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital; Fellow American Otological Society and American Laryngological, Rhinological and Otological Societies, Inc. His subject is: "Headache." Page 167. Address: 416 Marlborough Street, Boston.

Lee, Harold G. M.D. Yale, 1922. Orthopedic Surgeon, Carney Hospital, Boston, St. Luke's Hospital, New Bedford; Sol-E-Mar Hospital, South Dartmouth; and Central Maine General Hospital, Lewiston, Maine. His subject is: "Fracture of the Surgical Neck of the Humerus With Dislocation of the Humeral Head, Successfully Treated by a Closed Method." Page 175. Address: 412 Beacon Street, Boston.

Burnett, Francis L. S.B., M.D. Harvard, 1906. Research in Nutrition and the Control of Health; (1) After Eczema and Psoriasis at Massachusetts General Hospital, (2) After Iritis, at Massachusetts Eye and Ear Infirmary, (3) and after Arthritis, at Peter Bent Brigham Hospital. His subject is: "Progress of Nutrition." Page 183. Address: 205 Beacon Street, Boston.

BOSTON MEDICAL LIBRARY

Benjamin Waterhouse

1754-1846

To all members of the medical profession who have from year to year striven to support the efforts of Dr. Samuel Woodward at the General Court, in his endeavors to extend the benefits of vaccination against small pox, the life of Benjamin Waterhouse should be an inspiration. He was designated the "American Jenner" and his treatment at the hands of his contemporaries, lay and professional, was of the same order as that commonly meted out to those who are a bit in advance of their times. It is somewhat discouraging in these days however to observe the same attitude manifested toward this remarkable discovery, after more than a century of demonstrably successful trial. The persistence of this antagonism in face of the facts only shows how wide spread is the persistence of that characteristic of primitive man toward matters which concerned his health, viz.: superstition or some one of its derivatives. In our times we have builded memorials to Walter Reed and his confrères who sacrificed themselves to demonstrate the manner in which yellow fever is disseminated. In all probability similar action will be taken in honor of Noguchi for an equally noble self sacrifice. Buried in an attic in a dwelling house in Cambridge (No. 7, Waterhouse Street) is a bust of this man who dared a similar experiment upon his own children in order to demonstrate not only his confidence in the procedure but to bring an equal conviction to those whom he hoped to win over to his point of view, for their own and the general public's benefit.

"A prophet is not without honor save in his own country" and Massachusetts was tardy in accepting the proof that Waterhouse provided, of the efficacy of "Kine pox" to protect against the more serious disease. It was in part at least as a result of Presidents John Adams' and Thomas Jefferson's interest in Waterhouse's demonstration that protective inoculation against small pox became universally popular throughout the South and also in Maine, New Hampshire, Vermont, Rhode Island, Connecticut and New York. The Massachusetts Medical Society held back its support of his claims and the city of Boston refused to permit the inoculation of the poor gratuitously and it was only after his petition to the Board of Health for permission to conduct another test before a committee of physicians, clergymen and lawyers that his work was officially recognized. This test was carried out upon nineteen boys but it was two and one-half years after this demonstration that the acknowledgment of his success came.

Waterhouse was born in Newport, R. I., on March 4, 1754, and came of Quaker stock. His father was a man of prominence in the colony, a judge of the Court of Common Pleas and a member of the Royal Council for the colony of Rhode Island and Providence Plantations. His mother was a niece of the famous English physician Thomas Fothergill and it was through him that Waterhouse was helped in his medical education when he came to Great Britain after spending several years in an apprenticeship to Dr. John Halliburton in Newport. He began this apprenticeship when he was sixteen and in

1775 he left for England where he studied at London and Edinburgh for three years, going from there to Leyden where he received his doctor's degree in 1780. He remained still another year for post graduate work and returned to Boston in 1782 at the age of 28 to settle down to practice. In 1783 he was approached by Harvard with a view to starting a medical institute which became the medical department of the University, he having the Chair of Theory and Practice of Physic which he filled with distinction for 29 years. He founded the Botanical Gardens at Cambridge and with a collection of minerals which were sent him from England he founded the present very valuable mineralogical collection in possession of the University. In 1812 he was removed from the teaching force of Harvard because he was accused of being an obstructionist. The late Dr. Joseph Courtney recorded these facts in a paper he read before the International Medical History Congress at Geneva in 1926. Whatever may have been the characteristics of the man which justified his somewhat summary dismissal from the Harvard faculty we should not lose sight of the fact that his persistence in insisting upon the value of cow pox inoculation has been an inestimable boon to this country. It should also hearten us all in the fight for universal and compulsory vaccination.

MISCELLANY

ANNUAL REPORT — WORCESTER CANCER CLINIC

This report covers the first year of work of the Worcester Cancer Clinic. The first Clinic was opened February 9th, 1927, and the appended table indicates the number of Clinics held, new patients seen and the total attendance. In explanation of the unusually large number of Clinics held it should be noted that each of seven Hospitals holds a Clinic one day each week and one of the Hospitals two days a week throughout the year. A social service worker is in attendance at all these Clinics and identical records are kept, thereby making the Clinic a single unit though held in weekly rotation at the different Hospitals.

The Clinic has been under the direction of the Worcester Cancer Committee, consisting of seven physicians representing the different Hospitals that participate in the Clinic and also the Worcester Public Health Department. This Committee was originally appointed by the Worcester District Medical Society and its reports have been received and accepted by that organization. In addition to the medical committee there has been a lay committee, of which Dr. Lakeman of Boston has been secretary, which has carried on educational and publicity work and coöperated with the medical committee in the plans for Cancer Week.

The following statistical report gives a summary of the work of the first year. One or two comments on this report may be suggestive. The number of patients referred by physicians was 75. Newspaper and other publicity was responsible for attracting 207 to the Clinic. While the number referred by physicians was gratifying it is hoped that this number will be increased progressively. It is believed that the teaching value of the Clinic will be enlarged thereby, since reports of findings are sent to referring physicians and any service which the Clinic can render is available to the physician in handling the case. This consultation feature of the Clinic is believed to have definite value and should be given a wider scope. The importance of continued publicity, however, is fully recognized and it is expected that this method will still be the most important means of attracting patients to the Clinic.

A little under 30% of the cases coming to the Clinic showed malignant disease. There were in addition 58 benign tumors, many of which required definite treatment. This is also true of the other conditions encountered. It is the belief of the Cancer Committee that the figures presented indicate no wide spread hysteria or cancerphobia resulting in the community from the publicity methods employed.

The Cancer Committee is deeply indebted to the interest manifested in its work by the Junior League. In addition to liberal financial support this Society has aided both the medical and lay committees in their work, particularly in the activities of Cancer Week. No annual report would be complete without grateful acknowledgement to the President and members of the Junior League for the intelligent interest, material support and faithful personal work with which they have coöperated in the development of the Worcester Cancer Clinic.

For the Committee,

KENDALL EMERSON, *Chairman.*

Worcester, Mass., July 1, 1928.

STATISTICS

Number of Clinics	363
New Patients	330
Old Patients	362
Attendance	692
Number of Examinations	692
Number referred by Hospital	12
Number referred by Relatives	7
Number referred by Physicians	75
Number referred by Publicity	207
Number referred by Nurse	20
Number referred by Other Conditions	7
Number referred by Social Workers	2
Diagnosis:	
Benign Tumors	58
Operable Cancer	84
Inoperable Cancer	19
Other Conditions	169
Number referred to Hospital	106
Number referred to Physicians	95
Number referred to other Clinics	33
Number referred to Nurse	1
Number to return	89
Nationality:	
American	135
Turkish	1
French	70
Greek	2
Italian	6
Polish	9
Irish	58
English	1
Syrian	1

Lithuanian	2
Armenian	3
Swedish	32
Hebrew	9
Finnish	1
Number of Males	97
Number of Females	233
Color:	
White	327
Black	3
Number of Patients from Worcester	243
Number of Patients from Worcester County	87
Discharged	150
Cancer—cured	4
Improved	6
Unimproved to physicians	10
Died	10
Non-cancerous	119
Number of Patients sent to Pondville Hospital	4
Number of Excisions in Out Patient Dept.	20
Number of Radium Treatments in Out Patient Dept.	8

Respectfully submitted,
(Signed) GERTRUDE J. CARNEY, R.N.

FURTHER REFERENCES TO THE ACCIDENT COMPENSATION LAW (AMPLIFICATION OF THE STATEMENTS MADE IN THE ADDRESS OF DR. DONOGHUE)

We herewith publish the Sections of the law relating to the amounts payable in specific cases.

SECTION 34.[1] While the incapacity for work resulting from the injury is total, the insurer shall pay the injured employee a weekly compensation equal to two-thirds of his average weekly wages, but not more than *eighteen dollars nor less than nine dollars a week, except that the weekly compensation of the injured employee shall be equal to his average weekly wages in case such wages are less than nine dollars; and the period covered by such compensation shall not be greater than five hundred weeks nor the amount more than forty-five hundred dollars.*

215 Mass. 96. 218 Mass. 8, 141. 223 Mass. 273, 288. 228 Mass. 334.
217 Mass. 3. 219 Mass. 189, 430. 227 Mass. 55. 229 Mass. 325.

SECTION 35.[2] While the capacity for work resulting from the injury is partial the insurer shall pay the injured employee a weekly compensation equal to two-thirds of the difference between his average weekly wages before the injury and the average weekly wages which he is able to earn thereafter but not more than *eighteen* dollars a week; and the amount of such compensation shall not be more than *forty-five hundred* dollars.

217 Mass. 3. 218 Mass. 8. 219 Mass. 430.
220 Mass. 351. 222 Mass. 461. 229 Mass. 325. 235 Mass. 408.

SECTION 36.[3] In case of the following specified injuries the amounts hereinafter named shall be paid in addition to all other compensation:

(*a*) For the loss by severance of both hands at or above the wrist, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of one hundred and seventy-five weeks.

(*b*) For the reduction to twenty seventieths of normal vision in both eyes, with glasses, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of one hundred and fifty weeks.

(*c*) For the loss by severance of both feet at or above the ankle, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of one hundred weeks.

(*d*) For the loss by severance of the right or major hand at or above the wrist, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of seventy-five weeks.

(*e*) For the loss by severance of the left or minor hand at or above the wrist or of either foot at or above the ankle, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of fifty weeks.

(*f*) For the reduction to twenty seventieths of normal vision in either eye, with glasses, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of fifty weeks.

(*g*) For the loss by severance at or above the second joint of the thumb of the right or major hand, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of forty weeks.

(*h*) For the loss by severance at or above the second joint of the index finger of the right or major hand, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of twenty weeks.

(*i*) For the loss by severance of one phalanx of the thumb of the right or major hand, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of twenty weeks.

(*j*) For the loss by severance at or above the second joint of two or more fingers of the same hand which, in the case of the left or minor hand, may include the thumb, or of two or more toes of the same foot, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of twenty-five weeks, for each hand or foot so injured, but no compensation shall be payable under this paragraph on account of injury to the right or major hand in case one or more phalanges of the thumb of that hand or two or more phalanges of the index finger of that hand are lost by severance.

(*k*) For the loss by severance of at least one phalange of any finger, or of the thumb of the left or minor hand, or of any toe, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of twelve weeks, for each hand or foot so injured, but no compensation shall be payable under this paragraph for the loss by severance of one or more phalanges of the thumb of the right or major hand or for the loss by severance of two or more phalanges of the index finger of the right or major hand.

(*l*) The additional amounts provided for in this section in case of the loss of a particular hand, foot, thumb, finger, toe or phalange shall also be paid for the number of weeks above specified if the injury is such that that hand, foot, thumb, finger, toe or

phalange is not lost but so injured as to be permanently incapable of use.

1912, 571, § 2. 1913, 445, § 1. 696, § 1. 1914, 708, § 6. 1928, 356. 218 Mass. 8.

[1] This section, St. 1911, c. 751, p. 2, § 9, originally read as follows:

While the incapacity for work resulting from the injury is total, the association shall pay the injured employee a weekly compensation equal to one-half his average weekly wages, but not more than ten dollars nor less than four dollars a week; and in no case shall the period covered by such compensation be greater than five hundred weeks, nor the amount more than three thousand dollars.

St. 1914, c. 708, § 4, in effect Oct. 1, 1914, changed the weekly compensation from one-half to two-thirds of the employee's average weekly wages and increased the total amount payable to four thousand dollars.

St. 1917, c. 249, § 1, in effect May 14, 1917, increased the maximum weekly compensation to fourteen dollars.

St. 1918, c. 113, in effect April 26, 1918, increased the minimum weekly compensation to five dollars.

St. 1919, c. 197, in effect Aug. 27, 1919, increased the maximum weekly compensation to sixteen dollars and the minimum weekly compensation to seven dollars.

St. 1927, c. 309, § 7, in effect July 25, 1927, increased the maximum weekly compensation to eighteen dollars and the minimum to nine dollars, "except that the weekly compensation of the injured employee shall be equal to his average weekly wages in case such wages are less than nine dollars."

[2] This section, St. 1911, c. 751, p. 2, § 10, originally read as follows:

While the incapacity for work resulting from the injury is partial, the association shall pay the injured employee a weekly compensation equal to one-half the difference between his average weekly wages before the injury and the average weekly wages which he is able to earn thereafter, but not more than ten dollars a week; and in no case shall the period covered by such compensation be greater than three hundred weeks from the date of the injury.

The amendment, St. 1914, c. 708, § 5, in effect Oct. 1, 1914, changed the rate of weekly compensation from one-half to two-thirds, increased the compensation period from three hundred to five hundred weeks and increased the maximum from three thousand dollars to four thousand dollars.

The amendment, St. 1919, c. 205, in effect Aug. 27, 1919, increased the maximum weekly compensation from ten dollars to sixteen dollars and striking out the limitations as to the period during which such partial incapacity compensation shall be paid, provided that the amount of such compensation shall not be more than four thousand dollars.

St. 1927, c. 309, § 8, in effect July 25, 1927, increased the maximum weekly compensation to eighteen dollars and the total amount payable to forty-five hundred dollars.

[3] This is an entirely new section; St. 1928, c. 356. In effect August 27, 1928.

This section, St. 1911, c. 751, p. 2, s. 11, originally read as follows:

In case of the following specified injuries the amounts hereinafter named shall be paid in addition to all other compensation:

(*a*) For the loss by severance of both hands at or above the wrist, or both feet at or above the ankle, or the loss of one hand and one foot, or the reduction to one tenth of normal vision in both eyes with glasses, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week for a period of one hundred weeks. 218 Mass. 8.

(*b*) For the loss by severance of either hand at or above the wrist, of either foot at or above the ankle, or the reduction to one tenth of normal vision in either eye with glasses, two thirds of the average weekly wages of the injured person for each hand or foot so severed, but not more than ten dollars nor less than four dollars a week for a period of fifty weeks. 226 Mass. 131. 228 Mass. 211.

(*c*) For the loss by severance at or above the second joint of two or more fingers, including thumbs, of the same hand or of two or more toes of the same foot, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twenty-five weeks, for each hand or foot so injured.

(*d*) For the loss by severance of at least one phalange of a finger, thumb or toe, two thirds of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twelve weeks, for each hand or foot so injured.

The amendment, St. 1912, c. 571, § 2, in effect July 1, 1912, provided for specific compensation for the reduction of vision in either or both eyes to one-tenth of normal with glasses, striking out the words "unusual and irrecoverable loss of sight."

The amendment, St. 1913, c. 445, § 1, in effect April 7, 1913, provided for the payment of specific compensation, if the injury rendered the hand, foot, thumb, finger or toe "incapable of use" and provided further that specific compensation should cease when incapacity terminated.

The amendment, St. 1913, c. 696, § 1, in effect May 22, 1913, added the word "permanently" to the phrase "incapable of use" and struck out the provision that specific compensation should cease when incapacity terminated.

The amendment, St. 1914, c. 708, § 6, in effect Oct. 1, 1914, increased the rate of specific compensation from one-half to two-thirds of the employee's average weekly wages, leaving the maximum at ten dollars.

RECENT DEATHS

WARREN—Dr. John Warren, associate professor of anatomy in Harvard Medical School, fifth in direct medical descent from John Warren, founder of that school, died suddenly from cardiac thrombosis following an orthopedic operation, at the Phillips House of the Massachusetts General Hospital, Boston, July 17, 1928, at the age of 53.

McCARTHY—Dr. John Coakley McCarthy, of Malden, a Fellow of the Massachusetts Medical Society and graduate of Harvard Medical School in 1891, died June 17, 1928, of cerebral hemorrhage, at the age of 58.

WESCOTT—Dr. William Henry Wescott, an assistant surgeon in the United States Navy for three years during the Civil War and later a practitioner of medicine in Roxbury, died at his home in that part of Boston, July 8, 1928, aged 88 years.

He was born in Boston, April 8, 1840, and was a graduate of Harvard Medical School in the class of 1874. In this year he joined the Massachusetts Medical Society and settled in Roxbury, practising until retirement in 1913. At his request no funeral services were held over his body, which was cremated.

CORRESPONDENCE

THE COST OF PROPHYLAXIS IN DEALING WITH RABIES

The Commonwealth of Massachusetts
Department of Public Health

State House, Boston, June 28, 1928.

New England Journal of Medicine.

Gentlemen:

Because of our interest in the general subject of rabies and the multiple details of administrative practice connected with it, we were particularly interested in your admirable editorial on rabies, and also Dr. Lane's comments in your number of June 14. He questions the statement that persons able to pay for prophylactic inoculations should do so and in other instances the exposed individual should be protected at the expense of the local board of health. Dr. Lane makes a very good case for the justice of having this expense borne by the owner of the dog. In each instance where prophylaxis is indicated time is an important factor and my experience is that justice is no respecter of time. Our advice is that in every instance where indicated the treatment should be started at once and it is the responsibility of the local board of health to see that this is done and that no delay on the basis of who shall pay for the same shall be tolerated. After the inoculations have been administered there is the rest of eternity to allocate cost. Whether or not the owner of the dog can be located and if located will voluntarily or through legal action bear the expense of prophylaxis in addition to damage that may be indicated is a matter between the person bitten and

the owner of the dog and is not a matter in which the local health authorities are involved. Therefore the only persons with whom the local health authorities may negotiate directly in regard to the cost of the prophylaxis is the recipient of said prophylaxis. It would seem to be as absurd to say that the taxpayers should carry the expense of these preventive inoculations when the recipient is entirely able to pay because the situation requiring the inoculations is no fault of the recipient, as to say that first-aid treatment to an individual struck with a brick while passing a building under construction should be paid for by the taxpayers unless the builder through public officials can be forced to pay.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

DOINGS OF THE STAFF OF THE NEW ENGLAND SANITARIUM AND HOSPITAL, MELROSE, MASSACHUSETTS

Editor, N. E. JOURNAL OF MEDICINE:

The JOURNAL may be interested in the fact that Doctors Elmer F. Otis and Clara Beckner Otis, affiliate members of the State Society through the Middlesex East District Medical Society, have returned from a twelve weeks' trip abroad. The itinerary covered the medical institutions of the East, including Cairo, Jerusalem and Constantinople. The real objective, however, was special medical work done in Vienna and also Berlin.

We sailed from Boston on the S. S. Cedric April 8th and returned on the S. S. Belgienland, arriving in New York July 1. The trip was a most satisfactory and successful one, and in behalf of the New England Sanitarium and Hospital, of whose resident staff we are members, the time was especially devoted to the European methods of diagnostics, obstetrics and gynecology. The Sanitarium-Hospital medical staff is so organized that it has some of its members taking special work most of the time, and at present its superintendent, Dr. V. L. Fisher, is taking special work in surgery among the Western clinics.

Doctors Johnson and Johnstone have recently taken special courses in Boston clinics, and Doctor C. A. Haysmer and wife are scheduled to leave for Europe in the early autumn. Doctor Haysmer is assistant surgeon on the staff and has already scheduled three months of special surgical work in Budapest.

Yours truly,

ELMER F. OTIS, M.D.,
Secretary of the Medical Staff.

CENTRAL HOSPITAL
Twenty-six Central Street,
Somerville, Massachusetts.
July 14, 1928.

Managing Editor, NEW ENGLAND JOURNAL OF MEDICINE:

It is with much pleasure that I, as superintendent of the Central Hospital, write you in behalf of the Members of the Staff each of whom has received a copy of the publication of the very interesting group of articles written for the Section of Obstetrics and Gynecology in the *Boston Medical and Surgical Journal* and the NEW ENGLAND JOURNAL OF MEDICINE for 1927-1928.

The Members of the Staff highly commended the book form for its very attractive and concise presentation of facts to the medical profession and all wished to tell of their real appreciation to the Doctors of the Section of Obstetrics and Gynecology.

We wish also to take this opportunity to thank Doctor Charles E. Mongan through whose courtesy we received the aforementioned copies.

Very sincerely yours,

VERNA E. BEAN, R.N., *Supt.*

DOCTORS, JUSTICE, AND THE WORKMEN'S COMPENSATION ACT

Watertown, July 14, 1928.

NEW ENGLAND JOURNAL OF MEDICINE:

In the JOURNAL of July 5th, an article appeared, entitled, "Doctors, Dollars and the Workmen's Compensation Act", written by Mr. Samuel B. Horovitz. In commenting upon this article editorially, the JOURNAL states that Mr. Horovitz is a member of the Boston Legal Aid Society, and has had years of experience in dealing with the problems connected with the Workmen's Compensation Act. The JOURNAL further comments, "We regard this article as one of great practical value and urge every doctor who has any interest in this question to read it and lay it aside for reference."

I have read the article of Mr. Horovitz, and for the doctor just beginning the practice of medicine, who has no knowledge of the Workmen's Compensation Act, I feel that his article would unquestionably be helpful, but as time goes on, and his practice grows, bringing to his office patients who come within the scope of this Act, he will find that the article of Mr. Horovitz will in no wise straighten out all the difficulties that confront him.

I have been in the practice of medicine for over twenty years and have had some experience in taking care of injured employees of large corporations, before the Workmen's Compensation Act became operative in Massachusetts. I, personally, would like to return to the good old days, as my experience in cases of this character was much more satisfactory then than it has been since the adoption of the Workmen's Compensation Act. For several years I treated most of the accident cases of the Union Carpet Lining Company here in Watertown. Mr. Joseph Damon, who was at the head of this concern at that time, called me quite early in my career and I continued to do his work pretty steadily until the Workmen's Compensation Act came into effect. At that time, however, through his insurance company, Mr. Damon made some arrangements whereby the cases were treated at a clinic, and I was called in thereafter only to examine and give an opinion in a few cases in which Mr. Damon was personally interested. In those days, the charge of an office call was one dollar and for a house call, two dollars. I, however, at once began to charge the Union Carpet Lining Company two dollars for every office call that their employees made. House calls very seldom occurred, but what few did occur were made at the rates prevailing at that time, namely two dollars. Because of this advance in the rate for office calls, Mr. Damon called me to his establishment and we had quite a tilt over the question of my charges. I very well remember it. Mr. Damon was a fine, frank gentleman, sharp in business, but perfectly fair in his dealings. He naturally felt that it was wrong for me to be charging two dollars, when other physicians were willing to do the work for

one dollar. After a rather stormy battle, in which Mr. Damon became quite wrought up, he paid my bill and said, "I regret to have to say that I will never employ you in any of our cases again." In a moment, he qualified this remark and said, "No, I'll take that back; perhaps some day I may need a doctor badly, and you will be the only one available. Of course, under those conditions, I will be forced to call you." For about six months, I did no work for his Company, but at the end of that period,, it was sent back to me. Mr. Damon's comment to one in his office at the time as to why he made the change was characteristically brief, namely; "that he would rather pay twenty dollars for ten visits and get a man well, than twenty dollars for twenty visits and have the man still on the sick list." I do not cite this personal experience because it reflects creditably upon the service I rendered, but that it does bring out the important point; that honest, efficient service should be adequately paid for. It was true then and is as true today. Why then, all this squabbling between the insurance companies, the doctors and the constant appeals as made to the Industrial Accident Board? I personally have never yet appeared before the Industrial Accident Board to argue the justice of any bill I have ever rendered. I have appeared before them a number of times and given my findings in the case of some individual I was asked to examine. My reason for not appearing before the Industrial Accident Board, as in the case of many other physicians, is that the amount involved in any single dispute, is usually so small that a busy practitioner cannot afford to give the time, taking as it does a whole forenoon, and therefore lets it go by the Board. The promiscuous chopping off and pruning of doctor's bills, as practiced by many insurance companies is, I believe, unjustifiable, in the great majority of cases. As regards the type of industrial work done by the majority of medical men in Massachusetts, I feel that it is probably as high, if not higher in character than that found in many other communities. Of course, to still improve its character, the physician must be guaranteed a fair and just charge for his services and that without having to pass through any such tribunal as outlined by Mr. Horovitz. Of course, if this becomes increasingly necessary, the great majority of physicians are going to throw over this type of work entirely, largely because it is becoming increasingly more difficult to collect a just fee for the services rendered. There are, unquestionably, men whose income is practically derived from industrial work, but with many others, this is not true. I personally have always endeavored to give this class of cases prompt and efficient service and have kept in mind also that it was a Compensation case. I feel that most physicians do likewise. I also appreciate that in coming to a private office, they require more attention, more dressings and materials than the usual office case and make more real work than half a dozen ordinary patients.

During the past two years in this community, there has been a general advance in the rates of office and outside calls. With this advance, physicians feel that the rates for these Industrial cases should likewise be advanced. The cost, as I have said, of materials and equipment in any well-established and conducted office dealing with this character of case merits at least this advance. I have personally refused to longer treat this type of case because, with the present office which I maintain I feel that, at the old rate of two dollars for the office and three outside, I cannot "break even" or make a reasonable profit in doing this work. I have talked with a good many physicians and find that this feeling is becoming universal.

In Mr. Horovitz' article in the JOURNAL of July 5th, Page 32, under the heading of "Treatment during the first two weeks", he puts the responsibility squarely up to the physician, where he states, "you must treat him. Your own feelings, your humanitarianism, your instincts tell you that the patient who comes into your private office with his leg needing immediate amputation is going to get from you the needed assistance, and that later on, you are going to hunt for someone to pay you". I agree with Mr. Horovitz; that is exactly what any decent physician is going to do, but that isn't any reason why the physician, after giving adequate, prompt and efficient service, should not receive his fee without having to run all around Robin Hood's Barn to get it. Of couse, Mr. Horovitz is a better lawyer than he is a doctor, otherwise, the man needing to have his leg amputated, even the layman knows, would probably be sent directly to the hospital. Of course, Mr. Horovitz knows this too; but this word-picture, depicting the indifferent physician refusing admission into his office of a man needing to have his leg cut off, is simply put in to stimulate a few crocodile tears.

A number of years ago, I did for sometime the accident work for one of the local lumber yards here in Watertown. The owner of the yard was satisfied with the service rendered and felt, I believe, that his injured employees were returned in the shortest possible time to active service. His insurance company at once began to dispute my charges and I promptly called up the owner of the business (with whom I enjoyed the pleasantest relations) and told him I did not want to longer continue to do his work. He in turn, took it up with the insurance company, with the result that they refused to pay any bills submitted by me in the future. Shortly after this, while unloading lumber from a box car, one of his men tripped and pitched headlong through the door and struck across one of the rails opposite the car, inflicting a nasty gash in his head. His co-workers rushed to the office and gave notice of the accident. The employer promptly notified the insurance company and they ordered him to get a physician. This he refused to do, as they had failed to pay the bills of the men whom he had employed. The result was that this man was without medical aid until the insurance company sent for him in a taxi cab and took him to Brighton, where he was eventually treated by a doctor. Certainly, no physician would go to quite the extreme of this employer, but he was disgusted, not only in my own case, but with the insurance company bickering with the doctors whom he employed, after I ceased to do the work.

Some time ago, in front of my office, a man dislocated and fractured his right wrist in cranking a Ford. I returned home promptly when notified of the injury, reduced his dislocation, put up his fractures, and had an X-ray taken. He came to the office several times thereafter. My entire charge for this service was forty dollars. I sent a bill to his

employer and waited a month and then wrote them; still, no answer. I telephoned, and the most insulting lady with whom I ever talked over the telephone, gave me the name of their insurance company, but only after having hung up on me twice, without giving me the desired information. On my third try, after threatening to go in and guaranteeing that nobody would do any business after my arrival, until I got the desired information, it was furnished. I then wrote to the insurance company, sent my bill and a full and complete letter in explanation. I promptly received a very courteous note from the Manager, in which he stated he would look into the matter immediately. Two months later, after several telephone conversations, they offered me twenty eight dollars in settlement. This I refused, and told them I would take it before the Industrial Accident Board. To this the local Manager laughed and said, "Go ahead", because he well knew that for twelve dollars I would not appear at the State House in a matter of this kind. Later, however, I got my chance. A patient of mine was run over by an automobile and received several bruises across his lower legs. He came to consult me at the office, and I advised him, after opening some blebs and dressing his abrasions to go home and remain off his feet. Within forty eight hours after this time, the insurance company was hot on my trail and wanted to come out at once and pay me for my services to the extent of thirty-five dollars. This, of course, I refused to do. They next tried to settle with the patient, before his recovery, and only after he suggested that he had turned the matter over to his attorney, did they really begin to offer him money. Whether they were afraid as to what my attitude would be or not, I do not know, but my actual bill for services rendered in this case amounted to but twenty-eight dollars, and the patient, threatening them with suit, collected eight hundred for the skin abrasions on his legs. In passing, it is also well to note that this man's earning capacity was twenty-five dollars a week.

Several years ago, one of the employees of the Street Department of the Town of Watertown, fell in a trench and fractured his leg. He lived in Roxbury. I gave him First Aid at the office. Later in the evening of the same day with an assistant, I went to his home in Roxbury, etherized him and set his leg. He was put in a plaster cast. He was seen the next day. Then, not for two days. Then, not for a week. At that time he was doing well and I told him I should not need to see him for ten days. On my return I was surprised to find that the Insurance company had sent out a doctor after fourteen days, who had split the cast, examined the leg, and reapplied the cast, using two or three strips of bandage. Where it had been comfortable, it was now very uncomfortable, but the patient did not appreciate that he had any right in the matter. Later this company, on presentation of my bill, offered me about one half of the charge I had made, notwithstanding that I had gone to Roxbury on the after calls for a charge of five dollars, where ordinarily I would have charged ten. They offered me three, with the general reduction which I refused to accept. They told me to take it before the Industrial Accident Board if I cared to. But in this instance, I remarked that I was going to wait until the next Selectmen's meeting and then present with my bill, the facts of the case before them. This brought immediate action. My check in full came in the mail the next morning. I think they would really have taken me out to dinner that night, if I could have given them the time.

Several years ago, a young man in the employ of one of the large insurance companies told me that his job was to daily take doctors' bills which came in and telephone the doctors and ask how much they would reduce their charges. He stated that it made no difference, that the practice was universal; "reduce all and every bill that you can". On this particular evening that he was discussing it with me, he had saved a hundred and seventy-five dollars by beating down doctors that day, and felt that his job, if he was as successful as that in the future, was unquestionably secure.

It is, therefore, true, as commented upon by Mr. Horovitz, on Page 32, in which he says,

1. the insurance companies are putting up new, large office buildings and fighting for more and more compensation business, in spite of their constant wail that they are losing money on compensation business.
2. and by the fact that with a bill before the Legislature today to do away with insurance companies and substitute a State fund, many insurance companies are fighting the bill frantically.

Mr. Horovitz is right. I have not read lately of any failures of any of the insurance companies.

In Mr. Horovitz's article, I quote from Page 31 in which he says, "It is my personal belief that in any dispute on medical bills, whether between the doctor and employee, or the insurer and the employee, any of the parties has a right to a hearing before the Industrial Accident Board, and can obtain a hearing by writing to the Board". This is just where the average doctor falls down. He is unable, if he is busy to get up these voluminous reports and attend hearings that possibly in any single instance may not involve more than ten or twenty dollars. This repeated practice, however, of over a year, in the sum total, may in many instances amount to a considerable sum of money, but he has no real redress as each and every dispute must pass through the same channel which would involve, in the time lost from his work if he gave the time, an amount probably far greater than that involved in the reduction of his bill. What, therefore, is he to do? Take the same attitude that many physicians are taking; refuse to treat these cases at all. Again let me quote from this same paragraph. "I say this because I believe that the jurisdiction of the Board over medical matters should be extended as far as possible and was intended by the Legislature to be all-extensive. My years of experience with the Board have convinced me that it consists of seven able members, daily in contact with things medical as well as things legal, far better equipped for settling medical disputes than the ordinary courts, closer in touch with the worker, his needs and the insurer, than any other tribunal".

Mr. Horowitz pays the Industrial Accident Board a compliment, and I do not feel but what each and every member merits all that he has to say. A great deal of work unquestionably comes up before this honorable body, and in cases where I have given

testimony, I know that their inquiry has been fair, searching and full.

In regard to physicians, and more especially the ones of Watertown at the present time, I feel that one of their members has been lacking in his method of inquiry. Just what he asked for, I do not know, but I have a copy of a letter which I submit, written to him by Charles F. Horan of the Arrow Mutual Liability Insurance Company, which is the Insurance Company of the Hood Rubber company here in Watertown, our largest local industry. I resent the insinuations contained in this letter, as any decent physician would resent them, and upon inquiry, I find that Mr. Horan arrived at his conclusions by a short telephone conversation with me and by commenting on the matter to Doctor E. J. Kelley, in one of our local barber shops. I have today personally telephoned to all the physicians now available, in Watertown, ten in number besides my self (others being away on their vacations) and none of these men were approached or asked in any way what their feeling was in regard to doing Industrial work at the old rates. If Doctor Donoghue desired to get a real expression of opinion in this district, as regards the physicians' attitude, he would only have needed to call on any member of our local organization, and we, as a body, would have been pleased to give him a hearing. If he is willing to accept the slur as cast on Middlesex physicians as a class by this man, who is incompetent to judge the abilities of any good doctor, and remain silent, I am surprised at his attitude. I submit the following copy of this letter:—

June 18th, 1928,
98 Nichols Avenue,
Watertown, Mass.

Arrow Mutual Liability
Insurance Company.

Dr. Francis D. Donoghue,
Industrial Accident Board,
State House, Boston, Mass.

re Watertown Physicians.

Dear Doctor Donoghue:

Several weeks ago you asked me if I had any information in the matter of Watertown doctors refusing to treat industrial accident cases at the fees allowed by your division.

I find that practically all the physicians here are not only willing to treat industrial accident cases, but solicit this type of work. The quite general feeling seems to be that the fees allowed by you are reasonable as the physician is able to collect for practically all visits. A three-dollar house visit with a prompt-paying insurance company to bill seems to be at least equal to a four-dollar charge against a private patient.

There are two doctors—Oscar Creeley and Fred Higginbotham—who feel that they should to able to collect a fee one dollar higher than you allow. Dr. Creeley happens to be my family physician, and I believe that his treatments are really worth more than those of the average doctor. However, I appreciate that you can't make rules for the unusual physician—otherwise I should ask you to allow some of our Middlesex brethren about ten cents per treatment.

While Dr. Creeley says he will not take any accident cases, I should not take this very seriously. Certainly he will treat accident cases, and he will bill them at his usual charge of three dollars and four dollars—insurance companies that are unfamiliar with Dr. Creeley will cut the charges a dollar; and those that do know him will pay his bills at a rate higher than you allow.

Dr. Higginbotham's patients are usually those outside of industry, and I don't believe he would have more than a half dozen industrial accident cases a year.

If I can give you any additional information, please do not hesitate to call on me.

Sincerely yours,
(Signed) CHARLES F. HORAN.

Where and when, I venture to ask, did Mr. Horan receive his medical degree? The ease with which he presumes to "hob-nob" with Doctor Donoghue on the merits of some of our Middlesex brethren is not alone irritating but amusing.

In conclusion, let me say that before a satisfactory arrangement is arrived at in this whole matter, it is going to be necessary for the faithful, skillful and honest physician to be guaranteed a moderate, but fair, charge for his services. The adjustment of these charges in each and all of these cases cannot be entrusted to the office boy of some insurance company, who is to banter with and annoy the busy physician. No capable doctor who is honest in his work ever shuns its closest scrutiny, but this back-fence flopping of many doctors' bills, most of which are for small amounts, needs to be adjusted, if physicians are to continue to render service in this type of work. I have heard it intimated that the Hood Rubber Company had been suggested as a clinic for all the industrial work in Watertown. If that is so, perhaps this may be worked out in a very satisfactory manner. Perhaps the solution may be that the individual insurance companies will establish enough clinics throughout the country to handle this type of work and that the physicians now doing this work wholly, or in greater part, may become identified with them, but as long as the average practitioner is approached and this type of work sent to him, he should be paid a reasonable rate and one that is in keeping with the charges made in the community where he is engaged in practice. I do not agree with Mr. Horan's remark that "a three-dollar house visit with a prompt-paying insurance company to bill, seems to be at least equal to a four-dollar charge against a private patient".

Many of my private patients would be very glad to take issue with him on this point. After twenty years of practice, I have come to the conclusion that the great majority of people appreciate honest, skillful and adequate medical service and are willing to pay well for it.

Then what of the employee? Is he going to continue to be battered about from pillar to post, while the insurance companies go on a shopping tour for cheaper service? I think not. The insurance company clinics of today are a long way from competing with the character of personal service as rendered by any good competent private physician.

Mr. Horovitz has touched upon a big subject. He has led us down the lanes that legally we may pur-

sue in the work of caring for these cases, but he has not shown to the beginner at least, the pit-falls which lie before him. I feel that he may be in a position to do much to clarify the atmosphere on this whole subject. Whatever his procedure, and how far-reaching he may be able to go in this whole matter, let me suggest to him that I believe the vast majority of physicians are honest in their efforts and in their charges in these cases, as well as any others, and that a final satisfactory arrangement can only be arrived at when the physicians, as a class, receive the respect and consideration to which they are entitled. Oscar S. Creeley.

THE NORFOLK DISTRICT MEDICAL SOCIETY

July 13, 1928.

THE NEW ENGLAND JOURNAL OF MEDICINE:

Below are the proposed meetings of the Norfolk District Medical Society for the 1928-29 Season. The schedule below will be adhered to as strictly as possible. The carrying out of the proposed plan will, of course, depend upon the acceptances of invitations extended to the speakers. Minor changes may be necessary.

October 30, Pondville Hospital. Dr. Lyman F. Jones, Superintendent. Inspection, 4 P. M.; Business Meeting at 5:30; Papers by the Staff; Collation.

November 21, Boston Medical Library. In combination with Suffolk District and Middlesex East District Societies. Subject, Physiotherapy—Dr. F. B. Granger.

January 29. Roxbury Masonic Temple. Subject, Treatment of Varicose Veins by the Injection Method—Dr. E. E. O'Neil. Dr. Homans will open the discussion.

February 26, Roxbury Masonic Temple. Dr. W. R. Ohler. Subject to be announced. Discussion to be opened by Dr. A. A. Hornor.

March 26, Roxbury Masonic Temple. Subject and speakers to be announced.

May, 1929. Annual meeting program to be announced.

The Censors of the Society meet November 8, 1928, and May 9, 1929, at the Roxbury Masonic Temple, Warren Street, Roxbury, at 4 P. M., for the examination of candidates.

Very truly yours,

FRANK S. CRUICKSHANK, M.D., *Secretary.*

23 Bay State Road, Boston.

NOTICES

THE DEDICATION OF THE BETH ISRAEL HOSPITAL

The Medical Profession is cordially invited to attend the Dedicatory Exercises in connection with the opening of the Beth Israel Hospital which will be held on August 1, 1928, at 2 P. M. at 330 Brookline Avenue, Boston, Massachusetts.

CORRECTION

On page 146, issue of July 19, in the article of Dr. Leon White on "Radical Mastoid Operations" the fourth paragraph in the first column was incorrect. The sentence contained in that paragraph beginning "He advocates" should have read "He advocates a radical mastoid operation with primary skin graft to preserve," etc.

REPORT OF MEETING

WORCESTER NORTH DISTRICT MEDICAL SOCIETY

Regular quarterly meeting was held at the Burbank Hospital, Fitchburg, Tuesday, July 24th, 1928, at 4:30 P. M.

Speaker—W. Russell McAusland, M.D., of Boston. Subject, "The Role of Latent, and of Active Infection in Joint Pathology."

Inspection of the Hospital followed the literary exercises.

SOCIETY MEETINGS

September 10-14—American Electrotherapeutic Association. Complete notice appears on page 165 of the issue of July 19.

October 15-19—Interstate Post Graduate Association. Complete notice on page 1025, issue of June 28.

December 3-7—Radiological Society Convention. Detailed notice appears on page 712, issue of May 17.

DISTRICT MEDICAL SOCIETY

Norfolk District Medical Society

Complete Schedule of Meetings, Season of 1928-29, appears elsewhere on this page.

BOOK REVIEWS

Story of Electricity. By HERMAN GOODMAN, M.D. *With an Introduction* by VICTOR ROBINSON, M.D. Published by Medical Life Press, New York. 62 pages.

In this monograph Goodman presents in the briefest form the essential facts concerning the achievements of those who have brought our knowledge of electricity to its present state. The author acknowledges his indebtedness to the autobiography of Pupin; anyone who has read "From Immigrant to Inventor" will recognize much of the material. At the end is a chronological table of Electricity and Electrotherapeutics. Goodman has done the task very well; he has given enough facts to make the subject interesting, while keeping the material in brief enough form to make it readily available for reference. A number of portraits of famous scientists are interspersed.

Health Record for Women. By. J. THORON HUNTER, M.D. Published by The Williams & Wilkins Company, Baltimore. 64 pages.

This little book provides a convenient place of record for the important events of a woman's physical life. It contains, for example, a weight record, a menstruation calendar, a maternity section, and various charts for the recording of illnesses, operations and accidents. A few paragraphs setting forth the main facts relating to the particular phase of physiology in question are appended in appropriate situations.

The book is a sequel to Hunter's Health Record for Children. It is well suited to its purpose, but we fear there are few women sufficiently interested in their own health to take the trouble to keep such a record.

The JOURNAL does not publish the price of books received for review because of Postal regulations. Requests for this information addressed to the JOURNAL office will receive early attention.